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ABSTRACT

Research studied the activities of four special units set up by four Federal agencies to handle the diffusion and utilization of their respective research products. Comparative functional profiles of each unit were first developed and revised to constitute a consensus self-portrait. Next, data on the research utilization networks of two of the units were obtained from questionnaires. Subsequently, two interface conferences were convened involving sub-samples of those surveyed in the network study. A theoretical model was then developed to describe a resource-user problem-solving dialogue within which it was possible to analyze all functions and activities of diffusion and utilization agencies. Communication network maps were drawn to depict the types and flow of information. Major findings were that: 1) research information was rarely sought in crises; 2) attitudes toward dissemination and utilization were dominated by ideologies termed "linkage", "user-centering," "Research Development" and "capacity"; and 3) the most important elements in the dissemination and utilization system which needed improvement were a) linkage, b) diagnosis of user needs, and c) planning and organization of the overall dissemination and utilization system. (Author/PB)

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R&D UTILIZATION STRATEGIES AND FUNCTIONS: AN ANALYTICAL COMPARISON OF FOUR SYSTEMS

by

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Center for Research on Utilization of Scientific Knowledge
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Several federal agencies have set up special units concerned with the diffusion and utilization (D&U) of the research they have sponsored. Activities of four such D&U units were studied: (1) Division of R&D Utilization, Manpower Administration, Dept. of Labor, (2) National Institute for Education, Office of Education, DHEW, (3) Research Utilization Branch, Social and Rehabilitation Service, DHEW, and (4) Mental Health Services Development Branch, National Institute of Mental Health, DHEW. Comparative functional profiles of each unit were developed, based on extended staff interviews, and revised to constitute a consensus "self-portrait." In a second phase of the project data on the research utilization networks of two of the units were obtained through mailed questionnaires. Subsequently two "interface conferences" were convened involving sub-samples of those surveyed in each network study. The authors develop a theoretical model which describes a resource-user problem-solving dialogue within which it is possible to analyze all functions and activities of D&U agencies. Communication network maps are presented which include types of information, media, and flow among key sub-groups. Other findings: (1) research information is rarely used or sought in crisis situations, (2) attitudes toward D&U are dominated by four ideologies termed "linkage," "user-centering," "RD&D," and "capacity"; (3) the most important procedural elements in the D&U system and the most cited targets for system improvement are (a) *linkage*, (b) *adequate diagnosis of the real user need*, and (c) *careful planning and organizing of the D&U system* in that order.

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CHAPTER I

INTRODUCTION, SUMMARY, AND IMPLICATIONS

I. THE PROBLEM

A growing body of research and theory is helping us to understand how knowledge is diffused and utilized in the social system. Major literature reviews by Rogers and Shoemaker (1971), Watson (1971) and Havelock (1969), not only demonstrate an impressive empirical base but also provide useful frameworks or models which suggest that a clear and comprehensive understanding of these phenomena is possible.

The relevance of this growing corpus is especially evident when we examine the interface between policy makers and the research community; federal managers are increasingly being asked to make decisions about social research funding and social research utilization, but they usually lack the relevant research and theory on which to base their decisions. It is no longer a question of funding research, per se, but more one of how to organize an R&D program for maximum pay-off. What projects are likely to have the most multiplier effects? What projects are likely to impact most positively on the sponsoring agency?...the academic community?...the consuming public? What projects result in the most impactful reports with the widest dissemination and utilization? What projects produce the most positive and negative second order and long term consequences? These are a few of the many questions which might pass through the head of a federal manager as he considers the value of government sponsored social research. Most such questions in an ultimate sense are "quality" questions, i.e., they seek to know which projects are "good" and "bad," "important" or "trivial," "useful" or "non-useful," "helpful" or "harmful."

However, "quality" in the usual sense is not the only important question to ask about a research project. Increasingly we are becoming aware of the fact that "goodness" by itself does not guarantee utilization. For this reason several federal agencies have set up special units concerned with the diffusion and utilization (D&U) of the research which they have sponsored. Many of these D&U units have developed elaborate strategies of demonstration, network building, specialized coordinator roles, etc., on the assumption that such specialized mechanisms will accelerate the flow of knowledge.

Some of these agencies have also supported applied research and evaluation studies on their own dissemination efforts in the hope of arriving at more effective strategies. For example, the National Aeronautics and Space Administration has commissioned studies to evaluate its Technology Utilization program, (Arthur D. Little, 1965; Denver Research Institute, 1967), and the Office of Naval Research has sponsored a study of the transfer and utilization of the behavioral research it has sponsored over a number of years (Mackie and Christensen, 1967). Such studies generally arrive at dismal conclusions indicating the inadequacy of various mediating and translating mechanisms, the absence of human elements, "warm terminals" to negotiate the questions of potential users, and as often as not there is an underlying suspicion that the research or development work which is being "diffused" is simply not relevant or useful to anyone.

A few projects have also been undertaken to design and execute diffusion field "experiments" in which particular "good" or "excellent" projects are demonstrated and promoted in various ways (e.g., Fairweather, 1973; Glaser and Ross, 1971; Glaser, et al., 1966; Richland, 1965). Such studies have had mixed results but have been helpful in pointing out the range of diffusion approaches which can be undertaken and in demonstrating that such efforts can be documented and evaluated to determine what combinations of media and methods are most effective for particular target audiences.

To date, however, there have been no studies which have attempted to relate federal diffusion strategy to a systematic body of research and theory such as represented by Rogers or Havelock. Moreover, no studies have so far compared D&U strategies across a number of agencies. The project on which we will report here was undertaken to fill this gap. Its aim has been to examine the strategies and assumptions of four agencies responsible for D&U programs to compare these strategies and assumptions with the patterns of flow and utilization which ultimately result from them.

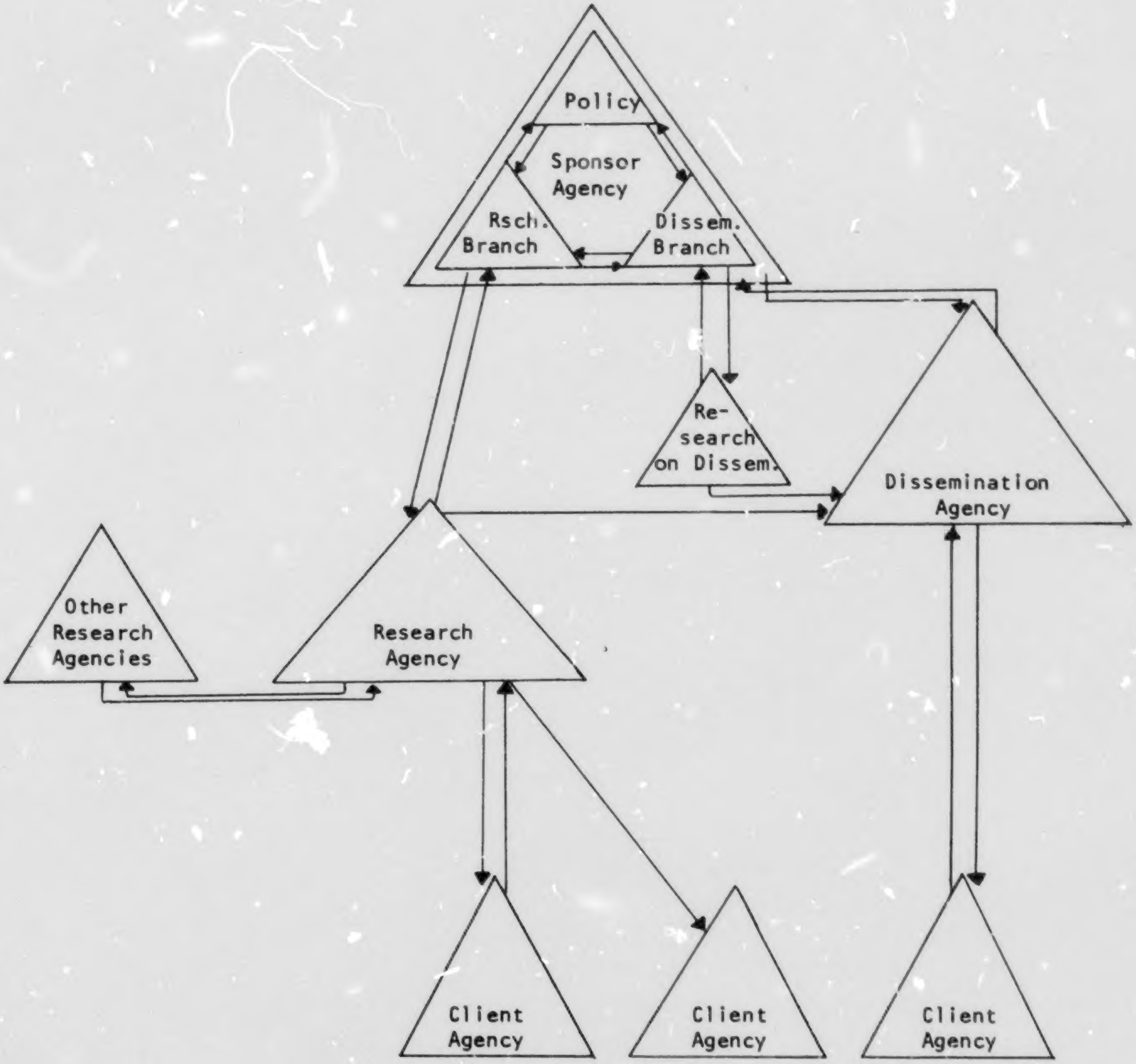
It may be easier to grasp the complexities of the research problem to which our study is addressed if we portray a number of the organizational elements in relation to each other graphically, as in Figure 1.1. This diagram

[Insert Figure 1.1 here]

shows several subsystems, with the research, funding, and client agencies playing the major role in the generation and flow of information. The model also sketches the linkages or communication paths between and among these subsystems. Traditionally, in the days of "little science" (Price, 1963) the research project or producer himself was the center of three fundamental research processes: the instigation or motivation for conducting research, the actual conduct of inquiry and discovery, and the dissemination of results. The model in the figure shows where we have come since; with the growth of "big science" the three functions may now be divided among three different systems: *funding sources* may instigate and specify the type of research to be done; *diffusion agencies* may make the results known; while the *research agency* still retains its traditional role of discovery. The splitting of roles is itself a consequence of the growth of science, one which has resulted in more complex structures and in the one central fact that the many different systems must now communicate effectively with each other in order for science to continue to produce utilizable and utilized knowledge.

The figure also indicates the principal organizational affiliations of those who have had inputs to our data gathering processes.

FIGURE 1.1 An Organizational Skeleton of Federal R&D Communication: One Pattern Emerging in the 1960's


Policy
Sponsor Agency
Rsch. Branch
Dissem. Branch
Re-search on Dissem.
Dissemination Agency
Other Research Agencies
Research Agency
Client Agency
Client Agency
Client Agency

Note: Linkages between subsystems are represented by arrows, which may stand for either uni- or two-directional communication. For example, we have illustrated the research agency in contact with two clients directly; one of these has request and/or feedback communication with the research producer, while the other has no return link.

During the middle and late 1960's while this configuration was emerging in several social problem areas, an informal inter-agency group was organized to discuss various aspects of dissemination and utilization policy and strategy. This inter-agency seminar included interested persons from half a dozen agencies including at various times specialists from the National Science Foundation, the Office of Economic Opportunity, the Department of Labor, and various agencies of the Department of Health, Education, and Welfare. Its meetings were held at irregular intervals with invited speakers, representing various D&U research and theoretical perspectives; the list included most of the outside experts that each agency had separately relied on to help establish its own strategy, including such persons as E. Glaser, R. Havelock, R. Lippitt, W. Paisley, E. Rogers, and others.

The seminar had the effect of creating an invisible college of persons in and out of government with a common focus of interest. Each agency had an opportunity to exchange with others on what strategies they were following, and at the same time they made their own research grantees and contractors aware of similar problems in other government agencies.

The seminar was sustained primarily by the persistent interest and effort of key members of four of the agencies involved, and it was in large part for this reason that these four were approached with the idea of a comparative self-diagnostic project and agreed to participate with some enthusiasm. Thus in a real sense this project began informally some years before the Manpower Administration awarded the contract to the University of Michigan which has made this report possible. Indeed, the formal project was organized with the clear expectation that it would revitalize the seminar and provide a basis for future discussions and mutual planning of improvements in all four systems, and other systems which in the future might see fit to join them.

The four agencies which joined in the project were:

a. The Division of R&D Utilization, Manpower Administration, Department of Labor.

b. The National Center for Educational Communication (NCEC), Office of Education, Department of Health, Education, and Welfare.

c. The Research Utilization Branch, Social and Rehabilitation Service, Department of Health, Education, and Welfare.

and d. The Mental Health Services Development Branch, National Institute of Mental Health, Department of Health, Education, and Welfare.

Such is the nature of things in a federal bureaucracy that some of these organizations underwent various transformations while we were studying them and then even while we were writing up our findings. Thus, as we write in the fall of 1973, the NCEC no longer exists as an organizational entity while its functions and most of its staff have been absorbed in the newly created National Institute of Education; most of the NCEC activities described in this report are being carried on at a maintenance level, but funding cutbacks are in prospect and the future direction of NIE D&U policy is uncertain. The SRS Research Utilization Branch was elevated to the status of "Division" soon after our study began, but here, too, with another leadership upheaval, D&U policy is being reappraised once more and the future is equally uncertain. Other changes, of major and minor import, have taken place in all four agencies, making the task of analysis more difficult and the specific findings and descriptions inevitably somewhat dated. Hence, what we have here is a kind of snapshot taken at a point of time in the recent past when there were four agencies of government trying to do roughly the same kinds of things; it can provide some ideas of the range of activities which can form a part of a D&U strategy, but it is definitely not a handbook or an official representation of what any of the agencies are now doing and plan to do in the future.

The design and execution of the project was entirely the responsibility of the Michigan project team headed by Havelock and Lingwood, but it did work in regular consultation with each of the agency staffs and with the approval and support of a study group comprised of Judah Drob of the Department of Labor, Howard Davis of NIMH, Thomas Clemens of USOE (now of NIE), and George Engstrom of SRS.

The original objectives as stated in the proposal were as follows:

1. To examine and describe the assumptions and strategies of four federal agencies with regard to the dissemination and utilization of contracted research and development projects.

2. To assess and compare perceptions of actual communication patterns and impact from diverse perspectives of sponsors, researchers, and users.

3. To create an opportunity for inter-agency reflection and analysis of these policies and their effects.

The great bulk of funding for the project was provided by the Manpower Administration which also awarded the contract. Some funds were also transferred to MA by the NCEC.

Because of the central role played by the Division of R&D Utilization in the Manpower Administration and by its director, Judah Drob, in inspiring the project and assisting in its development, we have been at special pains to discuss implications in terms of application by that unit. On the other hand, as the stated objectives indicate, our prime purpose has been to shed light on the D&U process in general and to derive implications for managers of D&U at any level of government and in the private sector.

II. METHOD AND HISTORY

The project was initially planned as a 15 month effort divided into three phases. The first phase would be diagnostic-descriptive, a documentation of what each unit was now doing or trying to do. It would be based on extended interviews with all staff in each unit and would lead to comparative "profiles." The second phase would consist of four parallel network surveys, sampling from the subsystems represented in Figure 1.1, and eliciting perceptions of D&U process information needs, and suggestions for improvement. The survey data would be enriched and confirmed by the convening of four parallel "interface conferences" involving a sub-sample of representatives from each Figure 1.1 entity, involved in live interaction and reaction to the survey and Phase I findings. The third phase would involve analysis, write-up, and report back to the inter-agency seminar.

Although this plan was followed in broad outline, it could not be implemented in all its dimensions due to a combination of circumstances. The following narration indicates in a little more detail the approach followed and the reasons for the changes in direction and emphasis that were made.

A. PHASE I: THE AGENCY PROFILES

Each of the federal agencies participating in this project had had a number of years' experience in planning and sponsoring dissemination and utilization activities, grants, and contracts based on research or development work previously funded by themselves or their parent agencies. Over these years of experience, all cooperating agencies had experienced both success and frustration in attempting to fulfill their mission and had arrived at reasonably well articulated rationales for their unit's current activity and general position as regards D&U. In the first phase of the project, the CRUSK team interviewed key personnel from the units in depth to obtain a reasonably complete and uncritical portrait of each unit's operating philosophy. Once committed to paper, these descriptions were shared with each agency and checked for errors, misperceptions, and general acceptability as accurate self-portraits.

Collecting the information was simple enough, and this aspect of Phase I was accomplished smoothly and on schedule. What proved more difficult was developing a coherent framework which would allow complete description and *comparison* of the four agencies, function by function. To this end, a model was developed and elaborated into a series of activity categories.

A special meeting was then held with the four-member study group in Washington to review this schema and to add or revise segments of it so that a satisfactory fit could be made to each agency. In this manner some degree of consensus was achieved.

Subsequently all the descriptive material from the agency interviews was coded into each category of the agreed-upon schema to form detailed portraits which could be compared, function for function, in a side-by-side format. Each detailed portrait was further checked for completeness and accuracy with all key members of each agency. The total cycle was far more time consuming and costly than had originally been conceived, although the study group members agreed that the approach followed was desirable and the product useful. The results of Phase I are reported in Chapter Three and Chapter Four.

B. PHASE II: THE RESEARCH UTILIZATION NETWORKS

The configurations of Figure 1.1 suggested the necessity of examining D&U from many different perspectives if we were to understand what really takes place in the flow and utilization of research in a total systems context. In Phase I we had begun with the sponsor agency's perception of the structure and process it oversees. In Phase II we planned to examine D&U from the perspective of the other systems involved: those who actually produce research knowledge, those who disseminate it, and those who ultimately use it.

Information on these different perspectives was to be gathered in two ways. First, we intended to interview representatives of each of the Figure 1.1 subsystems to obtain their separate perceptions of how information flowed in the system, the roles played by different groups, the barriers and facilitators of utilization, and the strategies and procedures that were most effective and most widely practiced. The remainder of the data were to come from a conference of selected informants from each subsystem. This conference was to be specifically designed to explore D&U patterns and interface problems among representatives of all four subsystems involved, as surfaced and implied by the interviews.

The original plan called, in effect, for four consecutive or parallel interview surveys followed by four consecutive or parallel conferences. With Phase I running behind schedule and absorbing a large share of the planned and authorized budget, these ambitious plans had to be modified. An effort was made, first of all, to augment the budget through contributions from each participating agency (not including the Manpower Administration which had awarded the contract and had absorbed all costs up to that point). All study group members were in favor of contributing to the project, but none were able to respond.* This occurrence, in itself, is probably instructive in illustrating the difficulty of inter-agency collaboration on a formal basis even when strong informal interpersonal linkage exists and is able to provide a strong rationale for action.

In any case, the inevitable consequence of these events was a cut-back in project plans and an agreement to move forward with network surveys and conferences in two of the four agencies (MA and SRS). The interview procedure for the start-up of Phase II was also found to entail costs beyond the budget capability, and for this reason, a mailed questionnaire was substituted.

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*A modest contribution from NCEC was subsequently made via a transfer to MA but this was used to reduce the MA share rather than to augment the project.

Separate sub-projects with separate budgets were then planned to complete Phase II work with NIMH and NCEC. With the demise of NCEC such plans proved unrealistic, but a formal proposal was submitted to NIMH with the encouragement of Dr. Davis. At this writing, no action has been taken. The major results of Phase II are reported in Chapters Five and Six.

C. PHASE III: INTEGRATION, COMPARISON, REPORTING

Particularly where new approaches are being taken, new methodologies tried, and new areas of knowledge explored, the interpretation and write-up of results are probably the most important project tasks. This was certainly the case here, but this fact was not adequately accounted for in the project time line. Hence, while Phase II was completed only about two months behind schedule, Phase III has consumed ten months instead of a planned one month. Regrets and apologies are due the sponsor and to the cooperating agencies on this account.

The CRUSK team was called upon for this mission in large part because of their past work in pulling together and summarizing the world literature on planning innovation and disseminating and utilizing knowledge. (Havelock, et al., 1969) An important aspect of this work was the derivation of alternative models of D&U which have been used as interpetive filters and guides to understanding specific D&U events, activities, and strategies in various fields. A large part of the mission for this project was therefore to apply these same analytical tools to four wide-ranging and complex federal agency "strategies" as perceived by the agencies themselves and by others. The results of this theory vs. practice comparison are reported in Chapter Seven.

Finally as part of this project, we were anxious to generate fairly specific and detailed suggestions of how an agency could *improve* its functioning. Many such suggestions we hoped to derive from the respondents, themselves, either via interviews or in the course of the interface conferences. On the whole, these suggestions fall short of our hopes, partly because we may have under-rated the difficulty of the task and the amount of concentration and creative imagination that it requires. In any case, a great deal of time has been expended in exploring action alternatives by the principle investigators, themselves, and these are reported both in the last section of this chapter and in Chapter Eight. They are intended not as hard-and-fast recommendations, but as a cafeteria of possibilities from which each agency might choose according to its own current sense of priorities.

One last point should be made about the write-up phase. After this project was well underway, the Social and Rehabilitation Service came forward with an additional grant to the senior investigator to develop alternative models of a research utilization system for SRS. The grant called for the performance of an entirely separate set of tasks leading to a report of a different nature, but each project has been helpful in providing insights for the other. In particular, the SRS grant allowed us to carry our application of the schema to a point of far greater sophistication and complexity including an application to the functioning of five well-known federal information services. Because of this cross-fertilization, we have felt justified in including an important segment of this analysis as a part of this introductory chapter under the heading: "One System Concept: Eight Operational Modes."

III. SUMMARY

A. ORGANIZATION OF THE REPORT

The remainder of this chapter will (1) provide an overview of our findings, (2) offer a fresh perspective on the whole question of D&U management derived from the problem-solving linkage model which evolved in this project, and (3) suggest some specific steps that could be taken by the Office of Research and Demonstrations of the Manpower Administration to improve its operations in R&D utilization.

Subsequent chapters are organized as follows:

Chapter Two presents a description of each of the four D&U units in the context of their agencies. Units are described in terms of legislative mandate, purpose of research and utilization activities, origin, hierarchy in the larger organization, present operations, other agency D&U efforts, knowledge base, and audiences.

Chapter Three serves as an overview to the problem-solving linkage model developed for this project and as an introduction to the more detailed analysis of the four D&U units. It also includes a section suggesting various ways in which the model needs to be qualified and expanded if its applicability to diverse D&U phenomena is to be understood.

Chapter Four compares and contrasts the four D&U units on each of the six D&U functions presented in the previous Chapter. The first section entails a short summary of each agency's work in each area of the model. The second section presents a more detailed description of each agency's activities as compared with each other and with a theoretical "maximum" for an effective D&U unit.

Chapter Five contains the analysis of the data obtained in the second phase of this study, the pilot questionnaire surveys of MA and SRS. This linkage analysis concentrates on the information network, media preferences in the network, information needs in crisis situations, and unmet information needs in each agency.

Chapter Six provides a documentation and evaluation of the two interface conferences. Both the SRS and MA conferences are discussed in terms of participation, design, group process, and evaluation by participants and staff. Conference products developed by the participants are included.

Chapter Seven analyzes interview and questionnaire responses in terms of past theories of D&U and principles of D&U derived from past research.

Chapter Eight attempts to bring together our observations from the four agencies, the two surveys, and the two conferences to summarize and to derive implications for action, following the six major categories of analysis. The pros and cons of 30 specific alternatives are weighed.

B. OVERVIEW OF THE FINDINGS

It is a little difficult to make a tidy package out of the findings of this study for a number of reasons. Very diverse methodologies were employed at different stages, and many pathways were explored partly to see if they were explorable. Hence, the results are always tentative, always based on small unrepresentative samples, case studies, subjective reporting. This is not said as an excuse, but only as a comment on the state-of-the-art and a warning to interpret what is said in the next few pages cautiously as something more than raw speculation but less than hard scientific fact. Here are ten general points which stand out and can serve as a kind of summary of what we have learned.

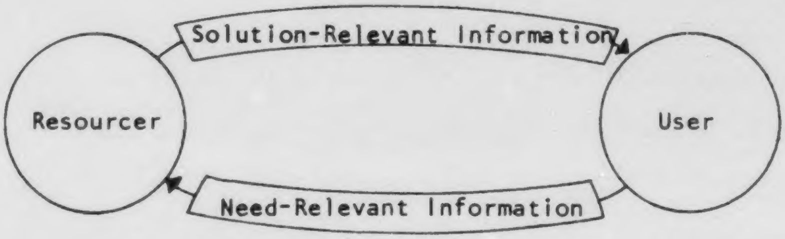
1. During the 1960's Support of D&U Emerged as a Function of Government Distinct from R&D

Four government agencies which had supported research development and demonstration activities in various disciplines over a number of years have come to recognize the need for dissemination and utilization activities planned, organized, and managed as a separate function from the processes of knowledge creation, research, and development. Roughly over the period from 1964 to 1972 separate units representing a variety of D&U functions have emerged, first as "dissemination" units, later as "utilization" units. Over these years, they have gradually increased in visibility, status, and disposable resources and have rapidly increased in complexity, variety, and sophistication of activities. (Primary evidence for this set of propositions is contained in Chapter Two and Chapter Four.)

2. It is Possible to Analyze All Functions and Activities of D&U Agencies in Terms of a Configurational Model of Resourcer-User Problem-Solving Dialogue

All participants in research, development, dissemination, and utilization activities can be understood as either "users" or "resourcers" in the various transactions that make up their collective enterprise. Each of these transactions can be interpreted as a dialogue conducted for

FIGURE 1.2 The Problem-Solving Dialogue



the purpose of solving a problem of one party, "the user," by matching his need or problem situation, with ideas, facts, skills, materials, or products held by the other party, the "resourcer." Two acts of information transfer are vital to the successful consummation of the dialogue, namely the communication of need information from the user to the resourcer and the communication of solution-relevant information from the resourcer to the user. Figure 1.2 illustrates the configuration in its simplest terms. The dialogue can be applied with equal **meaningfulness** to transacting at the micro level between two individuals in a short space of time and to transacting at the macro level between communities of user and communities of resource persons. At this macro level the model was found to fit the functions of four federal R&D programs as "resourcer" systems in relation to broadly defined "user" systems of practitioners and policy makers in given need domains.

3. The Manner in Which Each of the Four Agencies Manage the Problem-Solving Dialogue is Distinct but Comparable with the Others

An essential first step in any quasi-scientific exploration is *definition*, a second step is *description*, and a third is *comparison*. We feel that it is a signal achievement of this project that we have achieved all three with respect to a very broad and complex set of phenomena, namely events or acts in the generation, transformation, dissemination, and utilization of research knowledge. The many pages of detailed side-by-side analyses in Chapter Four are the principle testimony to this achievement. Yet we recognize that these comparisons, detailed as they may appear to be, are only the beginning of a rigorous analytic comparison which might specify all events within a specified time period, number of persons involved or affected, costs of labor, materials, etc. The point of the comparisons we have made is to illustrate that such is possible even while conforming to a logical sequential conception of the larger process within which particular molecular events are embedded.

4. It is Possible to Generate Communication Network Maps Which Include Types of Information, Media and Flow Among Key Sub-groups of a Larger System

From two very modest questionnaire surveys we were able to construct comparable flow diagrams for the information-systems represented by the SRS and MA utilization units and the most salient role groups to which they related. These flow diagrams appear as Figure 5.1 and 5.2 in Chapter Five of the report. From them we derived a number of hypotheses and pinpointed a number of gaps and discontinuities which seem worthy of further exploration. The fruitfulness of a network mapping approach is strongly suggested by the pilot data which we have been able to analyze here.

5. Research Information is Rarely Used or Sought in Crisis Situations

In spite of a general recognition that research information is more valid, reliable, and useful than other types of information, it is rarely mentioned as being used or sought after when professionals in these networks are confronted with crisis situations in their everyday working lives. Most of those surveyed dealt regularly with research as a routine part of their work. Despite this fact they tend to rely heavily only on information easily available within their own immediate work environment when they were in a crunch.

6. Groups in the Network Study Often Mention a Need for More Evaluative and Research Information

The pilot survey respondents indicated two categories of information as needed, beyond the amounts they are now receiving: these are (1) evaluative, performance, or statistical data, and (2) research information. MA respondents mentioned needs in the first category more often than they mentioned a need for research. In SRS we found just the reverse.

7. Attitudes Toward D&U are Dominated by Four Ideologies

By examining responses to 20 diverse "procedures" statements from all respondents in all four agencies, it was possible to discern four distinct clusters of attitudes best characterized by the phrases "communicate and collaborate" (Linkage), "help the user where he's at" (User-Centering), "plan and organize systematically" (RD&D), and "invest heavily" (Capacity). No one of these ideologies is dominant in any one agency and together they represent the main areas of concern and focal points for improving D&U process generally.

8. Linkage is the Most Important Procedural Element in the D&U System and the Most Cited Target for System Improvement

Of the 20 procedural items, "collaboration and cooperation between researchers and users to find and adapt what is useful" was consistently rated as most important and most discrepant from the existing situation. Linkage issues were also cited most frequently in interviews as matters of concern. There is widespread acceptance of the view that communication should be a two-way process and widespread concurrence that this is too often not the case.

9. Adequate Diagnosis of the Real User Need is the Second Most Important Procedural Element in the D&U System

It is clear that the communication of needs from users to the R&D community is at least as important as communication of findings to users, and the two activities must be related to each other.

10. Carefully Organizing the D&U System to Achieve Linkage and User Relevance is a Third Most Important Procedural Element and Target for Improvement

Most respondents agree that D&U activities are amenable to improvement through systematic planning and organization, and they endorse the effort to devise improved ways to make the "system" function as a system.

C. WHAT IS A D&U SYSTEM? ONE "SYSTEM" CONCEPT: EIGHT OPERATIONAL MODES*

One of the major products of this study is the framework for D&U functional analysis described in Chapter Three. The framework emerged from our earliest extended interviews with the four D&U unit heads and represents an attempt to encompass the full range of D&U functions they each described within a single model, a model which makes sense both descriptively and logically. Subsequently, we "tested" the framework by describing and coding all activities of each agency within the categories of the framework (as displayed in Chapter Four). Each detailed "case study" so derived was rechecked with the staff of each unit in extended feedback review sessions lasting from 4 to 8 hours. Revised drafts were then prepared reflecting input from these sessions, so that the final drafts appearing in Chapter Four should reflect a shared perception by the project team and the D&U unit representatives.

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*This analysis was prepared in the fall of 1973 by R. Havelock as part of the project "Knowledge Utilization Systems for Federal R&D Programs," under a grant from the Social and Rehabilitation Service, Department of Health, Education, and Welfare. It is included here because it builds directly on the model developed for this project and forms a useful starting point for thinking about action implications.

This consensual validation procedure was an important aspect of our work; it should be admitted, however, that the basic outline of the model emerged not inductively from any initial tabulation of agency activities, but rather from a theory of knowledge utilization evolving in our work over an 8 year period. The core concept in this work has been the problem-solving "link" or dialogue as illustrated in Figure 1.2. The elaborated model based on the "link" serves its purpose well as a gross cataloguing schema for D&U activities as demonstrated in Chapter Four, but many readers will feel that it doesn't give them much of a feel for specific operational realities, nor does it provide too many obvious buttons to push to make their own "systems" work better. If these are defects in the approach taken, we believe that they are correctible through elaboration and extension of the basic "link" concept and through application to each of the subfunctions. This work of extension and application will have to be carried on largely by the agencies themselves because of their separate emphases, priorities, and working styles. However, we can make a suggestive start, and will do so first by proposing eight alternative subsystems to achieve different D&U objectives. This discussion will be a foundation for the last section of this chapter in which we will try to spell out some operational steps which might be taken now by the Manpower Division of R&D Utilization to improve their functioning.

When we talk about a "total" system for societal problem-solving via research, development and R&D utilization, we are usually talking about at least eight types of services, each with a separate special function but all sharing a general set of goals regarding knowledge-based societal change and also in many instances sharing structural elements. The eight types of services which seem most obvious from our study are as follows:

1. A Coordinated Mission-Oriented R&D Program
2. The R&D Product Dissemination Service
3. The Knowledge-Based Problem-Solving Consultation Service
4. The Instant Response R&D Retrieval Service
5. The Rapid Response R&D Report Service
6. Continuous Flow Dissemination
7. User-Centered R&D

and 8. Natural Network Nurture

Let us consider each of these in turn very briefly.

1. A Coordinated Mission-Oriented R&D Program

There is some truth to the adage "build a better mouse trap and the world will beat a path to your door." Thus, a very high quality product which is directly responsive to important and well-recognized societal needs will probably find a ready market through national communication channels or through the most straightforward and simpleminded dissemination process. Hence, in special cases, there is some logic in focusing attention exclusively on relevance and quality of the product rather than on other aspects of a complete linkage cycle such as "need communication," "transformation," "transmission," "user helping," and so forth. This is particularly true in cases when the innovation which is being developed will have very high relative advantage (ratio of perceived benefit to perceived cost) and very high visibility of results. While none of these conditions generally holds true for the types of R&D undertaken in the behavioral and social science areas (and for the R&D with which our four agencies are primarily concerned), the approach may yet be a useful model for tackling some kinds of problems. This may be the case particularly for social experiments undertaken to answer specific policy questions such as housing subsidies for the poor, income maintenance, work incentives, and so forth. With these projects, the need has been articulated by social scientists and politicians over a number of years. The research contracts, themselves, are large and partly for that reason alone attract the attention of the press and professional communities in the area. Most importantly they are dictated by a relatively small number of policy makers at a high level who have a direct interest in the results. Under these conditions special efforts or strategies to disseminate findings are hardly necessary.

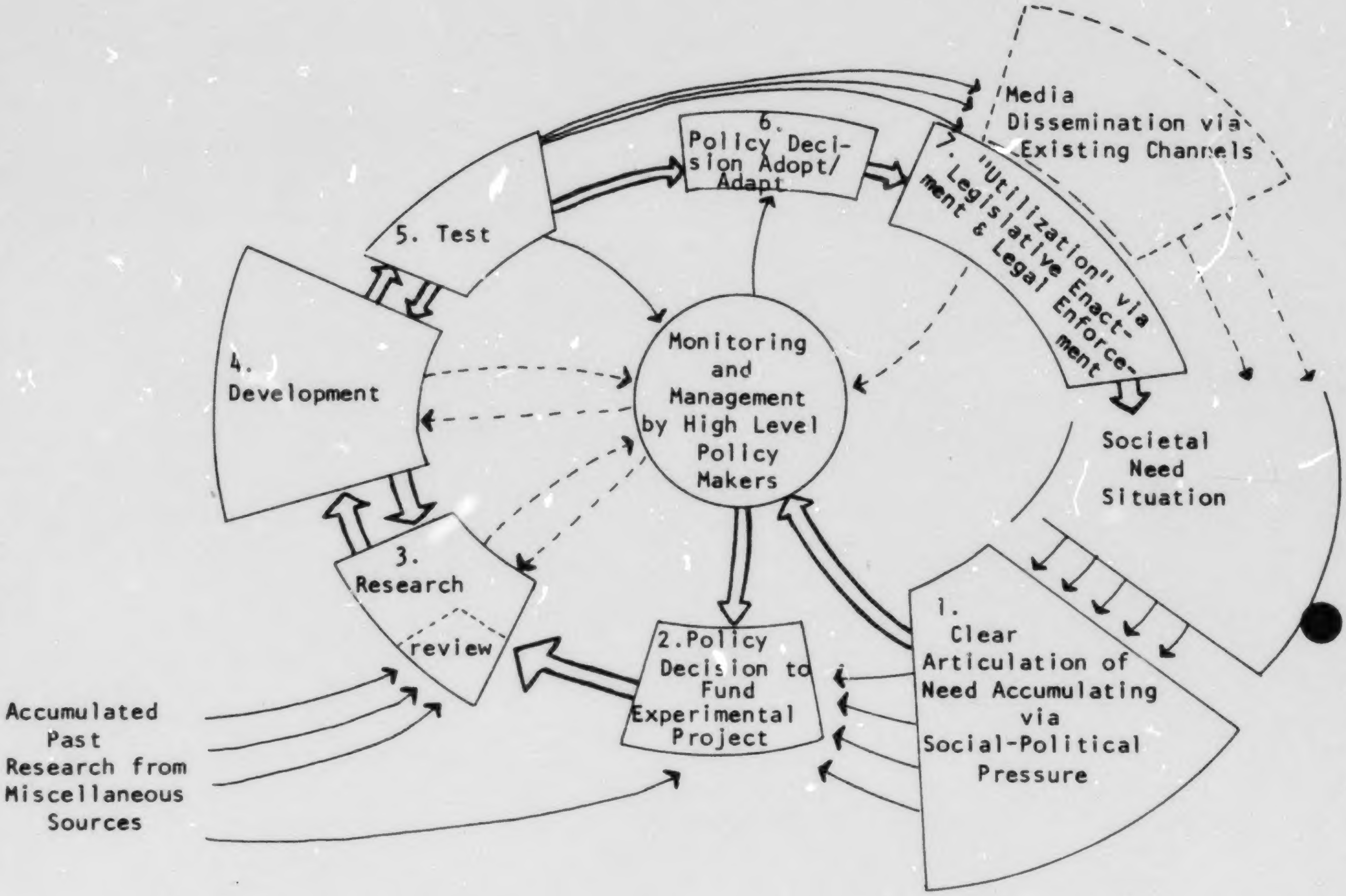
On the other hand, the number of projects that can fit this mode are small. Most problems are not clearly articulated and solution alternatives are complex and many, most not amenable to experimental treatment either because of the cost or the lack of an appropriate test situation.

[Insert Figure 1.3 here]

Figure 1.3 may suggest some of the dynamics of the mission oriented R&D program. Major decision and communication points involve relatively few people and clear impactful messages. In the largest sense, however, this "system" still follows the problem-solving cycle from public needs to R&D, solution transmission and utilization. The most intense dialogue and recycling takes place within the R&D process, itself, where first prototype development work leads to further research on specific "bugs" and testing leads to redevelopment cycles until a final test provides unequivocal empirical evidence that the innovation works.

The need sensing process is a very political one. Past research can play an important supplementary or contributory role but is not essential and sometimes ignored or downgraded as not problem- or situation-specific,

FIGURE 1.3 A Coordinated Mission-Oriented R&D Program


Media Dissemination via Existing Channels
6. Policy Decision Adopt/ Adapt
7. "Utilization" via Legislative Enactment & Legal Enforcement
5. Test
4. Development
Monitoring and Management by High Level Policy Makers
Societal Need Situation
3. Research
review
2. Policy Decision to Fund Experimental Project
1. Clear Articulation of Need Accumulating via Social-Political Pressure
Accumulated Past Research from Miscellaneous Sources

Total Time Frame: From Initial Go-ahead Decision to Official "Utilization"
Stages 1 through 7: 5-10 years
Stages 2 through 7: 3-5 years

not relevant or out-of-date. The media and sundry dissemination efforts may also play a subsidiary synergic role in alerting the public and non-participating decision makers to what lies ahead but this, too, may not be seen as essential. "Utilization" as a problem may also be downgraded because standard political-legal-administrative action is seen as sufficient to bring the change about.

Much of what is popularly conceived of as "important" or "interesting" research and development on social problems follows this route, including such items as "Sesame Street," "Performance Contracting," and income maintenance, and housing subsidy experiments. In general, such projects are set apart from whatever broad-based R&D effort the agency might otherwise have, and the types of D&U units we have been studying play no role in their dissemination, implementation, or utilization.

We believe, nevertheless, that an active and aggressive D&U unit could play an important educating role with respect to such schemes, partly through pointing out the need for more sophisticated, multi-faceted and synergic *need sensing, resource retrieval, dissemination,* and *utilization* activities.

It is also possible to carry out relatively modest and unpublicized projects following the same basic pattern, provided that the intended users are a relatively small and clearly delineated group, provided they have a very clearly articulated and circumscribed need, and provided that one agency of government has full authority to support integrated research, development, dissemination, and utilization activities. Such an arrangement would constitute what we described in the model as one form of "microsystem building." Such projects are generally fraught with difficulties, however, not the least of which is budgetary. While the giant well-publicized projects sometimes provide a good demonstration model of how a complete cycle of RD&D can be actualized, they provide a poor model for smaller projects in terms of cost. The development phase, in particular, is very expensive if it is done right; it also requires an aggregation of talent which is rarely available to less glamorous enterprises. Furthermore such projects, however well conceived, can fall victim to larger events in the culture, such as recessions, wars, budget cuts, etc., so that the kind of total project planning control originally assumed is not in fact the case. Major problems for smaller projects may only come clearly into focus at the utilization stage when most of the money is spent and time is running out; since the projects are initiated at a relatively low level without widespread popular support or media coverage to act as "synergizers," the would-be implementers must rely almost exclusively on the user-perceived intrinsic value of the innovation alone. There is little or no political, legal, or administrative power to back up the change and no social pressure either.*

2. The R&D Product Dissemination Service

It is neither necessary nor usually desirable for one unit of government or one R&D organization to have responsibility for all phases of the societal problem-solving loop. In fact, three of the four agencies we have studied were originally organized to take responsibility only for transformation and transmission of completed R&D products.** As these units developed a more sophisticated view of their function, they expanded into utilization and user helping and in some cases into need sensing and influencing the R&D process as well. Nevertheless, a strong case can be made for a unit which operates entirely in the dissemination mode, provided (a) that there are a reasonable quantity of R&D products worth disseminating, and (b) that the dissemination activities are well planned, meaningfully targetted and operate in a manner which is responsive to genuine user needs. Of these the first qualification is perhaps the most important, for while an ineffective program to disseminate good products is frustrating and disheartening, an *effective* program to disseminate *bad* products can be disastrous. Nevertheless, a D&U unit is often placed by higher authorities in the position of selling a product, and if this is the case, we believe that they can operate a meaningful, safe, and effective program within the limitations set. Figure 1.4 partly illustrates the situation.

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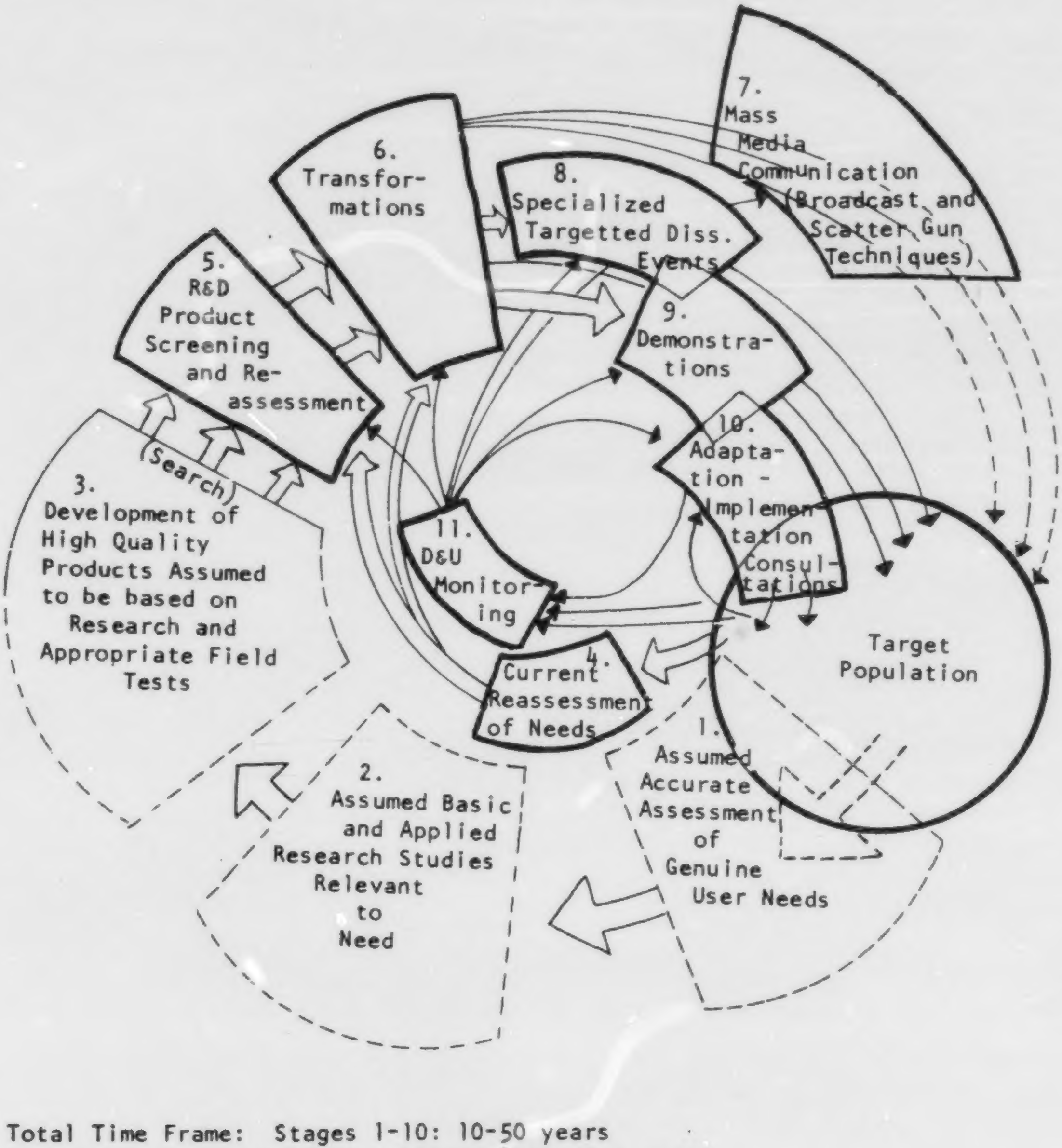
*This appears to have been the kind of situation which confronted the University of Michigan Manpower Laboratory in attempting to develop and install improved organizational management procedures in employment services.

**The NIMH unit is the exception.

FIGURE 1.4 Ideal Model of an R&D Product Dissemination Service


7. Mass Media Communication (Broadcast and Scatter Gun Techniques)
6. Transformations
8. Specialized Targetted Diss. Events
5. R&D Product Screening and Reassessment
9. Demonstrations
10. Adaptation - Implementation Consultations
(Search)
3. Development of High Quality Products Assumed to be based on Research and Appropriate Field Tests
11. D&U Monitoring
Target Population
4. Current Reassessment of Needs
1. Assumed Accurate Assessment of Genuine User Needs
2. Assumed Basic and Applied Research Studies Relevant to Need

Total Time Frame: Stages 1-10: 10-50 years
For One Developed Product: Stages 4-10: 1-3 years

Again reading this figure clockwise from the "Target Population," we *assume* that many constructive steps have gone forward in the past (dotted areas) leading up to the point at which the Dissemination Service takes over. Generally speaking, for many problem areas these are not wild assumptions; wherever a broad, loosely defined, and reasonably well financed research program has been in existence for a number of years (which is certainly the case for mental health and education), we can reasonably expect that various activities have taken place corresponding to steps "1," "2," and "3." Usually they will not have occurred in a well organized, sequential, and integrated fashion, but there will be enough science-based relevant information available to make a dissemination program worthwhile.

Nevertheless, when the Dissemination Service takes over, it must begin by recapitulating the first stages of the problem-solving cycle for three reasons: first, because the current need situation may be quite different (but usually not totally different) from the need situation when R&D activity was first undertaken; second, because it cannot take for granted that all available products are equally meritorious; and third, because it needs information on needs and on the innovations to design the appropriate strategies of transformation, transmission, and user helping. Hence, activity steps "4" and "5" have to be included as integral parts of the Dissemination Service system.

Step "4" in this kind of service may consist mostly of a market research operation in which the demand-potential of various existing R&D products is assessed by panels of representative users. The primary purpose of such assessments is not to influence new R&D but to guide selection and relevance-screening from the existing resource universe (Stage #5) and to indicate what sorts of transformations will be required for which audiences (Stage #6).

We have left in abeyance any consideration of how the Dissemination Service initially acquires or receives candidate products for dissemination. Usually these will be items derived from the larger agency's R&D program, but this is not strictly necessary, provided the items have clear relevance to designated target populations. It may also be that for very large R&D programs a separate search activity will have to be conducted to bring in a sufficient quantity and variety of products.

Stage "5," "R&D product screening and reassessment" is extremely important for several reasons: first, the economics of effective dissemination are such that only a few products can receive a full Stage 6 through 10 treatment. Hence, only the highest benefit, highest quality, and highest relevance items can be chosen, assuming a limited dissemination budget. Second, the widespread dissemination of ineffective products gives the Dissemination Service (and the R&D program as a whole) a bad name, turning off potential users from future innovations. Thirdly, even quality products which are directed to the wrong audiences can have similar negative consequences. Fourthly, there may be some products which could do major harm to users or to the society, either via their primary intended effects or through second-order consequences. Finally, a screening operation is necessary to provide a *comparative* basis for evaluating a range of products, since in nearly all cases the original "evaluations" and "field tests" performed as part of the R&D process will have been done on a product-by-product basis and in most cases will not have taken into account "disseminability" criteria.

Most of the above considerations entered the picture when the NCEC initiated a special dissemination program for the products of Educational Laboratories and Centers. Among the four agencies studied, this effort represents the nearest attempt to organize a complete dissemination service.

Once products have been identified, screened and selected, certain types of transformations are almost always in order before effective communication or transfer to users can take place. This usually includes the preparation of brochures summarizing the product's objectives, components, evaluative data and endorsements, and displaying this information clearly and in a way that attracts potential users without misleading them. A dissemination "package" may include different types of material for decision makers with different roles or at different levels in target user organizations. It may also include film strips, slide-tape sequences, sample materials, or other multi-media segments. While the Dissemination Service can hope that much of this material will have been prepared by the developers long before they get the product, they can never be assured of this and should therefore be prepared to undertake such transformation activities.

Following transformation, a fully effective dissemination program for any product requires a carefully planned, timed, and coordinated approach involving Stages 7, 8, 9, and 10 of Figure 1.4. The mass media efforts (Stage 7) may consist primarily of announcements of the product's availability in the professional journals or magazines with highest readership among the most salient practitioner group. Preferably these are in the form of news releases or special feature stories, but advertisements should not be ruled out. Mailing of brochures is also desirable if suitably target-representative mailing lists are available. These media efforts have several purposes, the primary one being to create general awareness of the product, its purposes, and its promises. Secondly, the media effort should attract the first level of inquiry and hence the initial examination of the product by media-oriented innovators. While these innovators are usually not typical or representative of the target population as a whole, they do provide a point of entry and an initial reaction which signals later problems or opportunities to the dissemination staff. A third function of the media campaign is to alert opinion leaders and higher level decision makers in the target population prior to or in support of special dissemination events aimed in their direction (Stage 8 in Figure 1.4).

Specialized targetted events may consist of specially convened conferences to which opinion leaders and higher level decision makers are invited, preferably to attend in teams representing their organizations or localities. These sessions would also include researchers, developers, and disseminators, and there should be opportunities for complete display of the products with take-home samples where possible, as well as opportunities for information exchanges among users and between users and resource persons.

Either in conjunction with or subsequent to these special events the dissemination staff should present demonstration activities or events appropriate to the product (Stage 9 of Figure 1.4). Although the nature of these will vary substantially with the type of product, such demonstrations should display the product in successful operation in a situation which viewers can consider typical or directly similar to their own. This will often but not necessarily mean that the demonstration sites will be localized. Target population representatives should again be invited in teams, including those practitioners who would be directly involved in implementation.

Demonstrations should be followed up quickly with some sort of direct consultation services (Stage 10) to those interested in making trial adoptions. Such consultations have several functions vital to successful utilization: e.g., (a) they provide a continued source of informational input on the product; (b) they provide an opportunity for assessment of the true situation of the user and the relevance of the product to him; such consultants should even be in the position of *dissuading* certain users from adopting certain products if their inspection of the user's situation so suggests ; (c) they provide an important source of personal motivational support for taking a chance on something new; and (d) they provide help on problems of adaptation and implementation which many users will not initially be sensitive to at the time of the demonstration.

One final set of functions, "D&U monitoring," (Stage 11) is essential to a dissemination service because it completes the problem-solving cycle and provides feedback to each of the other functions. All activities of a dissemination service should be governed by accurate knowledge of their effects. This means that data and documentation should be collected on user reactions to each stage as it occurs so that mid-course corrections can be made. In addition, every complete dissemination sequence for separate products should be evaluated as a totality, such reports being used to redesign the system to improve future product dissemination.

We have no doubt that a dissemination branch can be organized for any federal R&D program to operate successfully in the fashion described above and outlined in Figure 1.4, and that where a number of suitable products do exist, they will be thus disseminated and will provide predictable benefits to designated users, or at least to large enough numbers of them to justify costs of the dissemination effort.

No one of our four agencies has attempted to organize itself into such a service on a continuing basis. There have been a few pilot experiments where something like this sequence was followed for single products (e.g., Glaser, E.M., 1967, for the VRA, predecessor to SRS; Glaser, E.M., 1968, for SRS; Glaser, E.M. and Ross, H.L., 1971 for NIMH; Fairweather, G.W., Sanders, D.H., and Tornatzky, L.G., 1973, for NIMH). The NCEC has also tried to follow a similar process for R&D products of the Educational Labs and Centers, and for selected programs in reading; the NCEC's efforts differed from those previously cited in that they involved a number of products and in that the overall process was planned and managed centrally by NCEC with contracts let for subcomponents to different public and private institutions on a competitive basis. While it is true that all these programs were not uniformly successful (the appropriateness of the product, itself, as a candidate for dissemination and its relative advantage being major stumbling blocks) they provide enough evidence to support the main thrust of our argument here.

One puzzle which remains to be solved is how to organize a dissemination service for more than one product. There appear to be three principle alternatives. The most rudimentary could be called the "one product-one program" approach. This is based on the assumption that different R&D products deserve completely different types of dissemination programs in which dissemination skills may not be transferable, channels are different, audiences are different, and helping services are different to the point where perhaps an entirely new project staff must be recruited. Such assumptions of uniqueness might well have been implicit in the pilot dissemination experiments cited above; even though in one case a contractor was rehired for a second and a third job, there was no necessary overlap in staff or procedure, and contractors made no representations to the effect that they were about to take on such projects on an assembly line basis.

It should be added that where the D&U unit insists on the original R&D contractors taking full responsibility for dissemination activities, they are wittingly or unwittingly instituting a one project-one program policy.

Yet there would appear to be considerable redundancy and wastage in following this ad hoc project-to-project approach too far. For example, an examination of documented programs such as Glaser's and Fairweather's shows remarkable similarities and suggests that an approach which we might call the "assembly line" is also feasible and perhaps more efficient than "one product-one program."

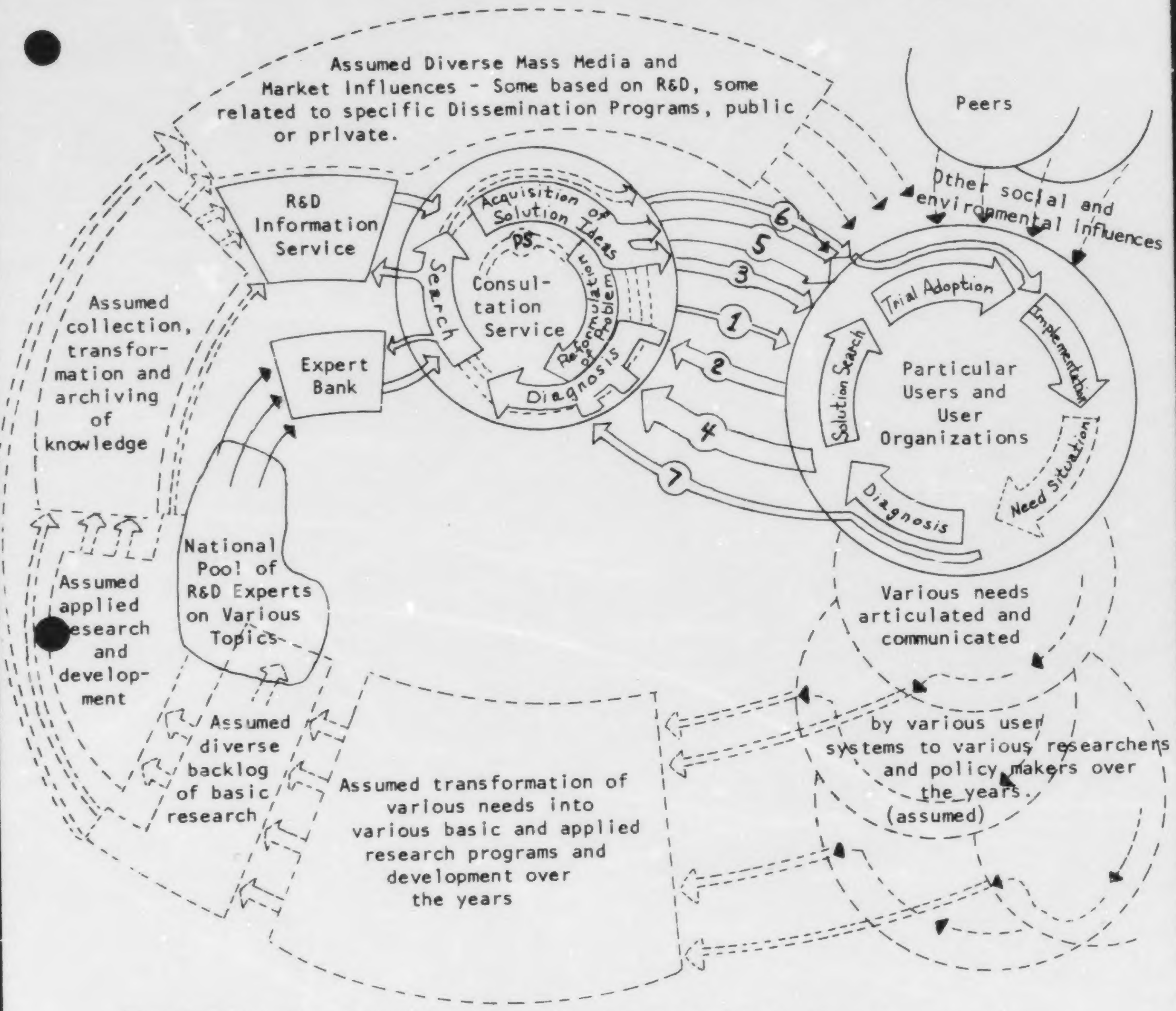
The "assembly line" acknowledges the importance of focused effort on one product at a time but it asserts the possibility that certain persons might specialize in transformation, media, conferences, demonstrations and consultation, regardless of their particular subject matter expertise, and that when one project is at a certain stage of dissemination, another can be initiated. None of the four agencies studied has been able to develop such an assembly line approach as nearly as we can assess for a number of reasons: (a) funding for dissemination has not been large enough or consistent enough to allow it, (b) there has not been a clear consensus internally within the federal D&U unit itself, that an assembly line was desirable, feasible, or central to agency goals, and (c) there has not been perceived to have been sufficient flow of quality products into the unit from R&D sources.

A third approach to organization of a dissemination program would be a multiple product integrated program in which several products would be proceeding simultaneously through the various stages from transformation to utilization. Such a process would open the possibility of directing more than one product at an audience at one time and allowing some degree of user choice among alternative products depending on the specific user's need situation. The input to the dissemination service could then be governed by consumer demand and could operate somewhat like the marketing division of a commercial firm with a broad product line. There would presumably be various economies of scale in this type of operation, and there would also be synergic effects from developing "brand" recognition (provided the screening remains rigorous). In general, it would appear that this kind of operation is only possible if the D&U unit is well-financed and backed up by a very large R&D program (such as the totality of NIMH projects or those of the National Institute of Education).

3. The Knowledge-Based Problem-Solving Consultation Service

Yet a third mode of operation for actualizing the R&D problem-solving cycle is illustrated in Figure 1.5. The prime focus of this approach is suggested by the solid lines in the figure, and in particular, the recycling dialogue between consultants and particular users. In contrast to the Dissemination Service approach, the Consultation Service does not engage in unsolicited communication concerning a particular product or line of products.

FIGURE 1.5 A Knowledge-Based Problem-Solving Consultation Service


Assumed Diverse Mass Media and Market Influences - Some based on R&D, some related to specific Dissemination Programs, public or private.
Peers
Other social and environmental influences
R&D Information Service
Expert Bank
Acquisition of Solution Ideas
PS
Search
Consultation Service
Reformulation of Problem
Diagnosis
6
5
3
1
2
4
7
Trial Adoption
Implementation
Solution Search
Particular Users and User Organizations
Need Situation
Diagnosis
Assumed collection, transformation and archiving of knowledge
National Pool of R&D Experts on Various Topics
Assumed applied research and development
Assumed diverse backlog of basic research
Assumed transformation of various needs into various basic and applied research programs and development over the years
Various needs articulated and communicated
by various user systems to various researchers and policy makers over the years. (assumed)

PS = Understanding and Skill in Process of Problem-Solving (Dotted lines inside Consultation Service)

Stages in Problem-Solving Dialogue

1. Client finding - relationship building - creating awareness of service.
2. Initial information/product/service requests.
3. Provisional knowledge supply/derivation of action implications from R&D.
4. Redefined comprehensive knowledge request.
5. Revised comprehensive knowledge/service/help supply.
6. Follow-up on adaptation, implementation.
7. Feedback on impact of knowledge, value of services provided.

Total Time Frame including build-up of assumed backlog of R&D: 10-50 years or more
To complete one P-S dialogue sequence: 2 months-2 years

Rather, it defines a fairly broad need area within which it can provide various consulting services of which R&D information is only one aspect. The controlling element is the user's need as defined and perhaps redefined by the user in dialogue with the consultant. If this need suggests the relevance of a particular product, all well and good, but, if not, a range of information and solution ideas may be applicable, some coming from various bits of basic and applied research, some coming from other users with similar problems, some coming from the judgments of experts who have studied the problem, and some coming from within the user's own environment and from the user, himself. The consultant helps the user search and explore these potential resources, and may also provide help in the process of problem-solving as such on which he should be expert.

As part of the exploration process, knowledge-based consultants will have at their immediate disposal two types of organized knowledge resource mechanisms, the R&D information service and the expert bank. Both mechanisms could be inside or outside the service, itself, but they must be immediately accessible and the consultants should be thoroughly schooled in their use and motivated to use them wherever appropriate.

This approach stands or falls on the techniques and the skills of the consultants themselves. They must be much more than conduits for R&D information: in addition they must fulfill each of the tasks indicated by Stages 1, 3, 5, and 6; they must have a repertoire of helping skills including the building of trusting task-oriented relationships, personal and organizational diagnosis, providing psychological as well as informational support, encouraging risk taking and broadening perspectives on alternatives for action, adaptation, and implementation. Among other things, they must be able to model and visibly demonstrate satisfactory information-based problem-solving strategies for users. They must in some sense also be both good listeners and recorders of user responses to their inputs.

The consultants also need to have an awareness of other impacts on the user, information and pressure from other sources including peers and superiors, others in the community and so forth (suggested by dotted arrows aimed at user in Figure 1.5). Inputs from consultants must be timed so that wherever possible they act synergistically with such other inputs rather than counter to them.

The consultant service approach arises out of a realization that information transmission, by itself, is not enough to bring about beneficial changes which could truly be rated as "utilization." Both the NCEC and the SRS D&U units moved strongly in this direction in the late 1960's, setting up experimental pilot projects in which a consultation service with a problem-solving consultant was the central fixture. They also attempted to provide training roughly along the lines suggested above. Both experiences have been evaluated and further evaluations are continuing. Evidence to date suggests that while there are many problems, the role is both tenable and useful. It is less certain that benefits accrued justify the costs involved.*

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*A current NIE contract to the Institute for Communication Research at Stanford University is seeking to establish appropriate quantitative measures for such an assessment.

Three major questions concerning the establishment of a consultation service can be raised however: first, however valuable it may be, is it a proper part of an agency charged with dissemination for the R&D products of a given agency; second, how far can and should the service go in involving itself in user problems, i.e., where does responsibility end; and third, can we afford it? We will consider each question briefly.

a. *Is a problem-solving consultation service relevant to the federal D&U function? and/or vice versa?*

The Knowledge-Based Consultation Center Concept brings together two ideas of "helping" that have traditionally been viewed as separate, namely knowledge transfer and process consultation. The former has traditionally been a topic of study in library science, journalism, and schools of communication; the latter has been the primary concern of psychologists and human relations-oriented professionals in related disciplines. Hence, the descriptions of consultation process appearing in the bulk of the literature (and there is a bulk) on the planning of change, social intervention, changing and humanizing organizations, etc. pays scant attention to the potential utility of "outside" knowledge sources such as would be represented in a federal R&D program. Training for the pilot consultant programs of SRS and NCEC have reflected this division. The SRS training was managed by persons heavily oriented toward the human relations process side while the NCEC trainers focused on information transfer as a communication skill and on the ability to use information services, principally ERIC, with maximum efficiency. With the professional experts and trainers thus divided, it remains difficult to make a fair test of the marriage of the two concepts in the role as conceived and advocated here.

b. *How far should a consultant go in providing help?*

From the informationist and the human relationist standpoint, the knowledge-based consultant may intrude too much on the life space of the user, not only by suggesting answers to problems but also by helping to define them and helping to implement solutions. Where does expert intervention properly leave off and self-help begin? There is no easy way out of this dilemma but there are a few guiding principles that might keep the consultant out of deep water. One is *voluntarism*: never do for a client what he doesn't want you to do, and rely on his asking you as much as on your suggesting to him. Another is *collaboration*: as much as possible the consultant should get the user involved in the search and solution building process, leading by example but always looking for ways to let the user pick up the task for himself. A corollary of this principle is for the consultant to always leave his own processes open for inspection so the user knows what he is doing and why. A third related principle might be *never do anything twice all the way*. Every act of helping should also be an act of training; after setting the example of how to work on the first problem, the consultant should be able to play only an advisory role on the next one, and stay completely out of the third and so forth.

c. *How can we afford it?*

In service domains as broad as "manpower," "mental health," "education," and "social and rehabilitation services," the number of needy potential users who could make profitable use of knowledge-based consultation services is staggering beyond imagining. The painstaking, personalized operation described here would appear, on the face of it, to be grossly unresponsive to the level of demand.* We can begin to answer this question in at least three ways. First, we can be highly selective in the types of users we try to reach, choosing (a) those who are most "important" on some criterion such as power or level in the system, (b) those most visibly in need, or (c) those in the best position to set an example for others through their visibility, centrality, and opinion leadership. Regarding the last mentioned possibility, it is interesting to note that "involvement of informal leaders of opinion" was the least popular among twenty proposed alternative D&U procedures for staff members in each of the four agencies studied and for the two pilot "network" surveys.

A second answer is to provide the service, not as a service but as a demonstration-and-training device to show and train users to help themselves in a similar fashion.

A third approach is simply to set limits on the services provided, e.g., to exclude follow-up, to take need statements at face value, to provide information without interpretation, or to adopt a pure human relatio[illegible]t stance and skip the information part entirely. These are all hard choices and there simply is not enough information at hand on the relative effectiveness of different elements in the overall approach to make wise decisions.

4. The Instant Response R&D Retrieval Service

A fourth possible mode of operation for a D&U unit would be to provide information on demand to any particular user for any particular and immediate information need he may express within a broad topic area at any time. The concept is not really as radical as it sounds from that statement, however. In fact, it is reasonably close to the old notion of a library, a place where you could go to find information on any topic that was of interest to you, where you could be guided by a simple catalog card, and sometimes a librarian, to a particular shelf, where you could pick off a print package (book or journal) which contained the information sought, sit down and read it right then and there. It has been a fine concept and it works pretty well for some people some of the time. It works particularly well for the scholar-experts who tie together a field of knowledge and push it forward with new theories and hypotheses based on an accumulation of past findings. For this reason, if for no other, any broad-based R&D program requires a library component, some sort of archiving of its printed products so that they are available o request to various users. Indeed, each of the agencies studied has more or less satisfactory means of doing this either by themselves or by feeding their material to a more centralized library system.

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*But probably no less responsive than recommending private psycho-therapy for every needy psycho-neurotic in the land.

Yet the library concept has held much more promise than it has been able to deliver. It has tended to service the needs of only a very special type of user and even that use has been greatly affected by the proximity of the library to the particular user. Therefore, one important potential role for a D&U unit is to develop new mechanisms to speed response, simplify and rationalize access, localize service, and widen the range of response so as to satisfy a broader range of users with a broader range of user needs. New technology such as computers, remote terminals, microforming, photocopying, etc., accompanied by an explosion of knowledge in print form have added to the temptation to move in this direction.

Of the four agencies in our study only one, the NCEC, has done a substantial amount of exploration in this arena and the results are not too clear. ERIC was initiated as a "one-stop" information service to supply the information needs of a wide range of professionals in education and to provide information cheaply and quickly from a comprehensive file. The basic archival features of this system are now established and functioning well. Furthermore, the volume of output to users has increased substantially from a slow start to the point where it can have a significant impact on the vast population of educational users.

Nevertheless, the ERIC system does not go very far in reaching out to users or in tailoring responses to them, and its efficiencies can only be appreciated by regular users who have easy access and a good grasp of its thesaurus. It is possible to go much further in information servicing and there are a few instances where this has been done, for example, in the "hotline" of the Congressional Research Service. Figure 1.6 suggests a framework for such a service within the context of the larger D&U process which we have been considering.

[Insert Figure 1.6 here]

In contrast to the consultation service, there is no real involvement in the user's situation, either in diagnosis or implementation. A very great variety of need situations are assumed and the formulation of *"need"* into *"information need"* is the responsibility of the user himself. This is not to say that the initial statement is taken at face value; some sort of dialogue must take place between the user and some representative of the service both to code the request so that it can be routed properly and to verify and clarify what is being asked. This "question negotiation" Stage (#3 in the diagram) should be handled by a trained "operator"* who formats the request so that it can be processed efficiently by the service. Again in contrast to the consultation service, the operator does not develop a sustained personal relationship with the user and preferably should not have to return for a renegotiation on the same request. This stage might be handled in a 5-10 minute phone call.

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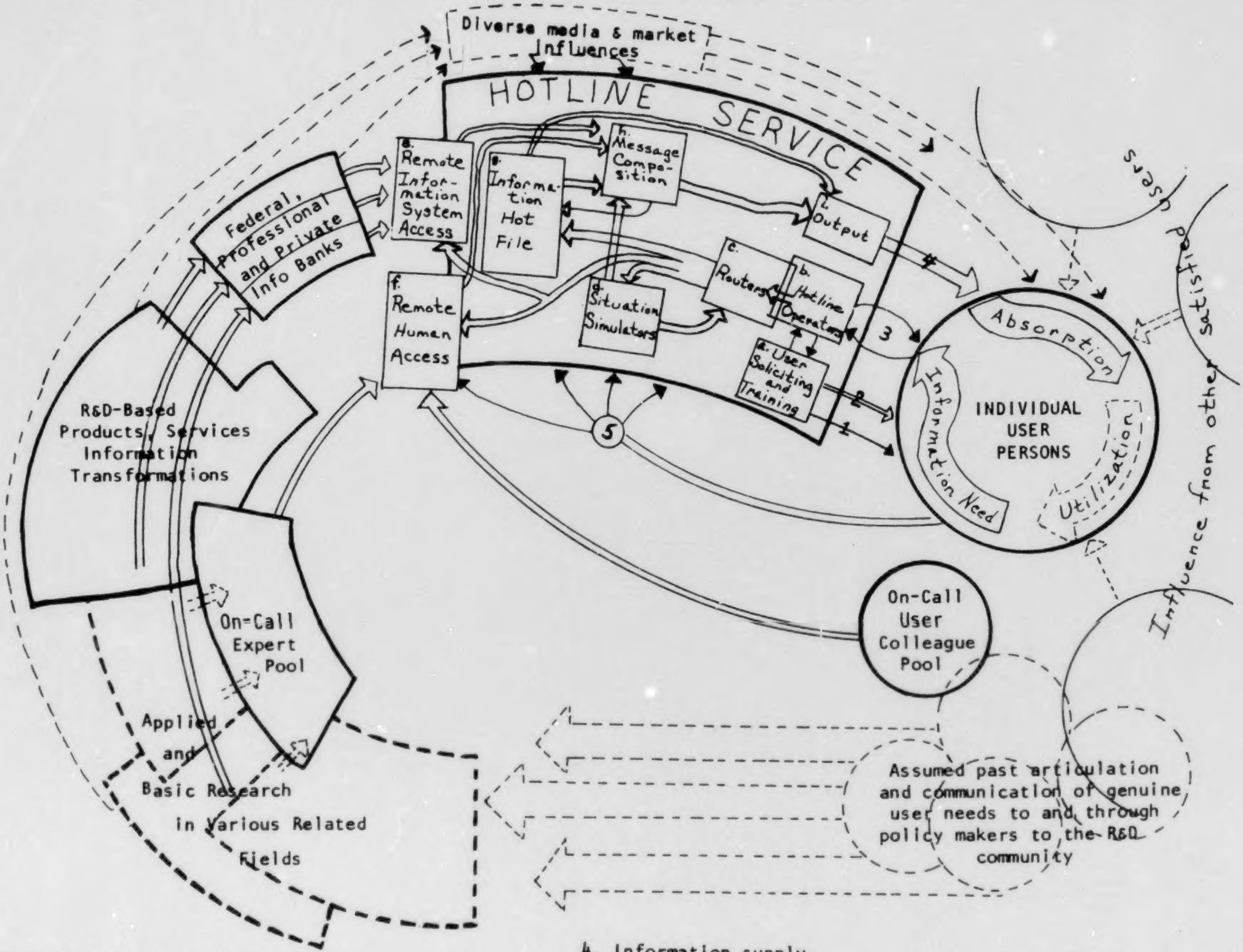
*The Far West Laboratory for Educational Research and Development has developed a training module explicitly for this purpose as part of their "Educational Information Consultant" (EIC) program. The module is fairly well suited for such training regardless of the field of knowledge.

FIGURE 1.6

One Approach to an Instant Response R&D Retrieval Service


Diverse media & market influences
HOTLINE SERVICE
a. Remote Information System Access
e. Information Hot File
h. Message Composition
i. Output
c. Routers
b. Hotline Operators
a. User Soliciting and Training
d. Situation Simulators
f. Remote Human Access
Federal, Professional and Private Info Banks
R&D-Based Products, Services Information Transformations
On-Call Expert Pool
Applied and Basic Research in Various Related Fields
INDIVIDUAL USER PERSONS
Absorption
Utilization
Information Need
On-Call User Colleague Pool
Influence from other satisfied users
Assumed past articulation and communication of genuine user needs to and through policy makers to the R&D community
1
2
3
4
5

Stages of Activity at the Service-User Interface
1. Service availability announcement
2. Demonstration
3. Question negotiation (dialogue)
4. Information supply
5. Monitoring user effects: utilization/satisfaction

Time Frame to Service One Request (Interface Stages 3-4): 5 min.-5 days

A third contrast with consultation is the requirement of a very systematic division of labor. Because the service aims at high speed accurate response for a large volume of users, it needs to have an established routine for request processing involving several steps which can be executed in rapid-fire succession. It should be emphasized, of course, that Figure 1.6 suggests only one of many hypothetical combinations; the elements are spelled out here only to give the reader a more concrete idea of the kind of process that is involved. The rationale for each stage is discussed below.

a. *User Soliciting and Training*

It is important to think of an information hotline service as an R&D innovation which, itself, must be advertised and marketed to the intended user population. Hence, in some respects the installation of the service follows the model of the second operational mode illustrated in Figure 1.2. In other words, there has to be (1) awareness building and (2) demonstration prior to any anticipated (3) user initiatives. The demonstration event must give both a visible example of an information request being handled fast and well to a user's satisfaction and it must give each attending person a chance to try out the process there and then both to see for himself and to develop the minimum initiating and responding prerequisites for later use when he is in his normal work environment.

Demonstration events can also act as training situations for hotline operators.

b. *Hotline Operators*

As previously discussed, the service must have available at all times (probably at telephones) persons whose job is to receive and format incoming requests and to conduct a brief interview with the requester to delineate the question as much as possible. These operators would be the sole channel for request inputs. Operators might also have the task of heading off inappropriate, excessive, or outlandish requests, and limiting the expectations of the requester.

c. *Routers*

Although it is possible that operators in a small low-volume service would have full knowledge of where to transmit requests, the routing function is clearly distinguishable. The router must have a firm grasp of the capabilities of each subsystem and must make a preliminary determination of how a request can be handled most quickly and completely. Routers are also in a good position to monitor and tabulate requests to assess what types of users are asking what types of questions and to determine what new types of resources are therefore called for.

d. *Situation Simulators*

Because the router should never have to spend more than a few seconds on any one request so as to keep the flow moving, he should have a back up person or team to whom he can send puzzling, difficult, or very non-routine requests (assuming these have not been blocked by the operator). The task of this group is to find out or to provide a fairly accurate guess of (a) what the user "really" wants and/or (b) what a response ought to consist of. We call these "situation-simulators" because we imagine their mission to be to empathize with the user, to get inside his head as much as possible. This may require a second brief interchange to gain additional diagnostic information from some users.

Typically, once the simulation analysis has been done, the information requirements can be clarified and the router is able to channel the request to the indicated processing locations.

e. *Remote Information System Access*

The hotline service should have at least one staff member who understands and has easy access to all relevant and publicly available R&D information banks. Accessible material should be from government and private sector sources, from reports, books, and journals, completed and on-going projects, etc. This person should have on-line remote terminal access to as many of these systems as possible. Such coverage is important in fulfilling the requirement of comprehensiveness which will be vital in establishing the credibility of the service as a "one-stop" information system for some users.

f. *Remote Human Access*

An effective hotline service should not rely on print sources alone. In many cases the best rapid summary source for a response will be a person. Therefore, the service should have a human resource file with two types of listings. One would be "experts," i.e., people who have done R&D in a particular area and/or have a reputation of knowledgeability. These persons may be used in at least three ways, e.g., (1) to give references to appropriate print sources, (2) to provide "off-the-top-of-the-head" answers to the request, (3) to be referred as a name back to the requester.

A second important pool of human resources are those persons who can be identified as knowledgeable or experienced practitioners who are known to have been faced with the same sort of situation or setting as the user, himself, preferably in the same locality ("on-call user colleague pool" in Figure 1.6). One possible source for building such a file would be former requesters.

g. *Information Hot File*

Assuming a large volume of requests from a large number of requesters, many requests will be redundant or largely so. Hence, it is important to accumulate all prepared responses filed by subject matter for future reference. This "hot file" should always be searched first by the router because it provides the most efficient and by far the speediest means of responding.

h. *Message Composition*

Accessed information from any of the above sources should not be dumped in raw form on the requester unless it is asked for in this way (which may be the case for R&D requesters, for example). Hence, some minimum amount of screening, ordering, interpretation and summary are required prior to output. The amount and type of such composition might be tailored to the type of user making the request and the user's indicated purpose. In any event, a "hotline" service cannot do a great deal in this area if it wants to retain its "hotness."

i. *Output*

Output can be a more or less routine matter, but there may need to be some flexibility here, too. For example, while most output would presumably be mailed in one packet to the requester, an urgent request may require a telephone summary response in addition to or instead of a mailing. The output department should also be available for receiving user questions on material received, and they may be in the best position to solicit user reactions (Stage 5 in the figure).

While the mechanics of a "hotline" service may seem obvious enough on paper, the desirability of this operational mode is difficult to assess against others because it has never been given a fair and complete test. Like the consultation service, there appear to be enormous cost problems, particularly in start up. These include initial promotion-demonstration efforts, recruitment and training of specialized staff, assembly of human access lists, etc. However, in contrast to a consultation service there are very significant economies of scale once the system is working, i.e., there is the possibility of handling a large number of requests, and, assuming redundancy of requests and an accumulating hot file, speed and accuracy of response ought to go up dramatically as the user population gets very large while the cost per request goes down. On the other hand, this may not happen until the hot file reaches massive proportions unless other restrictions are placed on users such as limiting subject matter of request and restricting users to a certain category of practitioners with a peculiar set of problems. Alternatively there could be an increasing scale of charges depending on the amount of information requested or provided, or depending on the number of processing steps asked for.

There is no question that an instant response mechanism is desirable. Analysis of responses in our two pilot surveys suggests that in many crisis situations the speed of response in information terms is crucial. The problem comes in designing a system which can produce high quality information relevant to the need at hand economically.

5. The Rapid Response R&D Report Service

While the instant response mode discussed above can provide information service of a very specific nature tailored to specific users, it cannot provide such information in a very sophisticated and integrated package unless such already happens to exist somewhere in the accessible resource universe. But it should be possible to design a service which not only reviews existing sources but also composes a comprehensive state-of-the art analysis for the user in highly readible form. To our knowledge only one existing organization, the Congressional Research Service, has been set up to provide such a service on a routine basis. Figure 1.7 proposes some of the components which we feel are necessary parts of such a system. We call it "rapid response" to suggest that while quality tailored reporting cannot be performed instantly, it can be performed within a cycle which gives the requester information he can use within days or weeks of the time he expresses the need for it.

[Insert Figure 1.7 here]

Like modes 3 and 4, this system starts with an initiative by the user who in this case could be a person or a group. In contrast to the instant response mode, the user here must be selective in proposing a need; the "need" cannot be a trivial request nor something of a crisis nature for which a response is required on the spot. It must, therefore, be something that has gnawed at the user for some time with some intensity such that he feels it worthwhile for someone to spend time and effort on a solution.

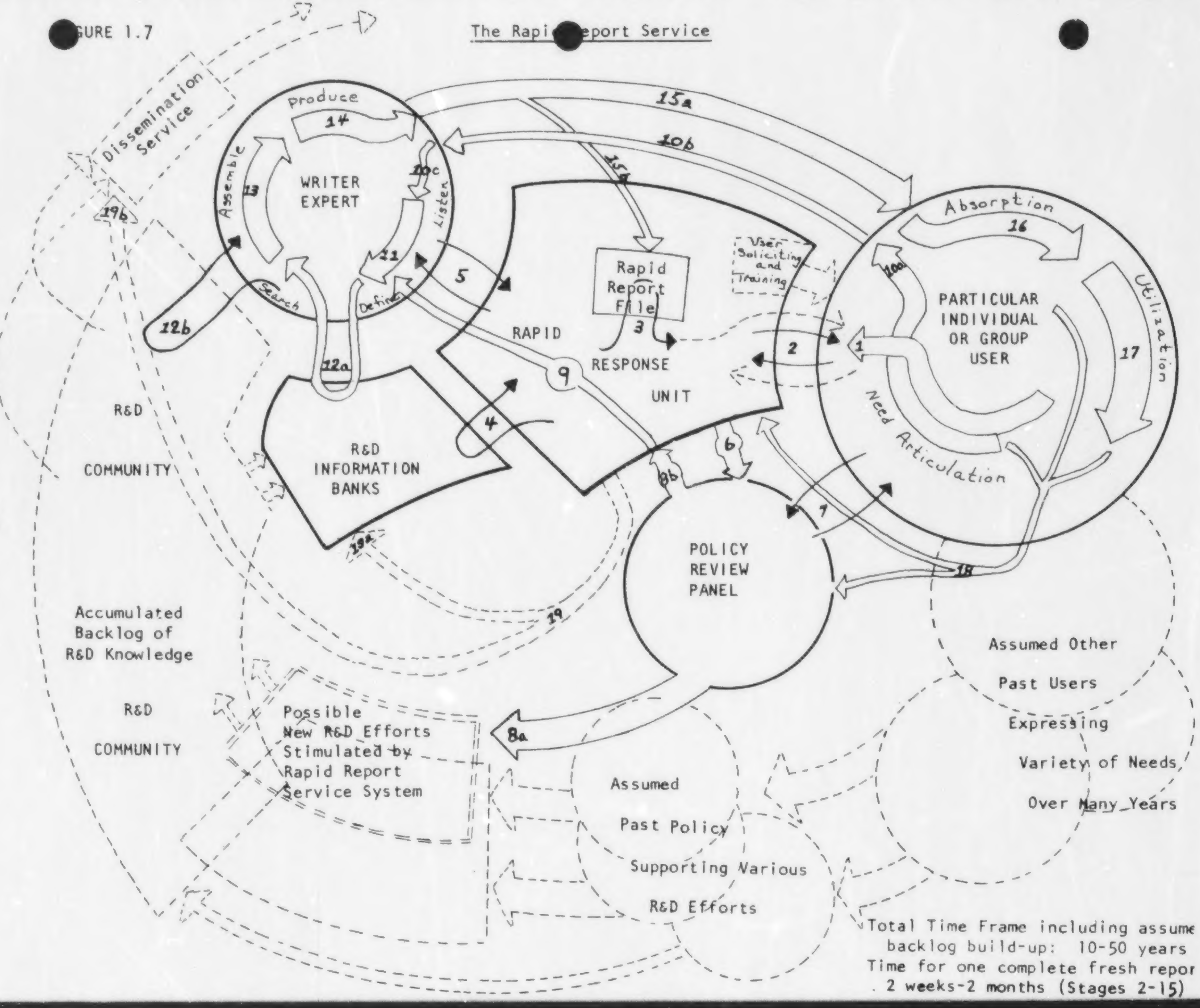
Also, in contrast to the consultant mode, the need must be clearly an *information* need for which a search of existing R&D sources is highly relevant.

The core of this system is someone we call the "writer-expert." This person must be, on the one hand, generally knowledgeable about the domain of R&D to which the request is directed and, on the other hand, able to write in a clear, integrated way for non-academic readers. Because this combination of skills is fairly rare and highly sought, the Rapid Response Service may have its greatest problems in recruitment and adequate compensation for the pool of persons it will have to keep on-call for response missions.

Figure 1.7 proposes four distinct subsystems necessary to the task: (a) the writer-expert (or more precisely a pool of such persons); (b) information banks which can be searched efficiently for comprehensive retrieval of existing R&D literature; (c) the rapid response unit (RRU), itself, which organizes and monitors necessary interchanges; and (d) a policy review panel which verifies the importance of the request and authorizes major responsive actions.

One possible pattern of action leading to a "rapid response report" is suggested by the numerical sequence in Figure 1.7. The best way to explain this operational mode might be to review the proposed sequence.

GURE 1.7 The Rapi eport Service


Dissemination Service
19b
Produce
14
Assemble
13
WRITER EXPERT
10c
Listen
21
Search
Define
12b
12a
15a
10b
15a
5
Rapid Report File
3
User Soliciting and Training
RAPID
RESPONSE
UNIT
9
2
1
4
R&D INFORMATION BANKS
19a
6
8b
7
Absorption
16
10a
PARTICULAR INDIVIDUAL OR GROUP USER
Utilization
17
Need Articulation
18
POLICY REVIEW PANEL
19
8a
R&D
COMMUNITY
Accumulated Backlog of R&D Knowledge
R&D
COMMUNITY
Possible New R&D Efforts Stimulated by Rapid Report Service System
Assumed Past Policy Supporting Various R&D Efforts
Assumed Other Past Users Expressing Variety of Needs Over Many Years

Total Time Frame including assume
backlog build-up: 10-50 years
Time for one complete fresh repor
. 2 weeks-2 months (Stages 2-15)

(1) The Information Request Statement. The first step in a particular cycle is the preparation by a user (and preferably a group of users working together) of an information request statement to be submitted to the RRU, probably in a pre-established format. This assumes, of course, that the service as a whole has been previously "sold" to the user and that he has received the minimum level of training and encouragement to want to try it out. For this mode we would expect a minimum of user soliciting and training, however, because, on the one hand, the system does not require and cannot handle a high volume of users or requests, and, on the other hand, it builds in a high degree of user-resource interaction so that the user is not on his own in stating the need or interpreting the results.

(2) Request Clarification and Redefinition Dialogue. Specialists in the RRU discuss the request with the user (probably by telephone) in order to clarify what is being asked for in terms that can be readily understood by both the review panel and the writer-expert. This specialist will also verify the level of need, and perhaps the degree of consensus in the user organization that this is an important need. This specialist will operate at a different level than the "hotline operators" of mode #4 in that his dialogue with the user will be longer and deeper and in that he will be more involved in analysis and routing of the request. It will probably be necessary for RRU specialists to have some expertise in the general subject area of the request.

(3) Rapid Report File Search. The first processing act of the RRU should be to search its own backlog of responses to determine if the same request has been made by another user in the recent past. For early requests, of course, there will be no such backlog, but over a long period of operation we would expect many requests to be redundant. In these cases the RRU becomes, in effect, an instant response system unless substantial updating or adaptation is required.

(4) Preliminary Document Search. The RRU should next make a quick search of the information bank to which they have readiest access to determine the scope of literature available on the topic and to locate whatever items, if any, fit the request very closely. If there appears to be a "hit," this fact may be communicated directly to the user to see if he is satisifed. This search should almost certainly be computerized-on-line to meet "rapid response" requirements.

(5) Preliminary Dialogue with Writer-Expert. With preliminary search data in hand, the RRU now sets out to locate a writer-expert (WE). The document search should give important clues on promising candidates for this role unless a WE pool is already established. The purpose of the dialogue is two-fold: first to get an overview of what an adequate response might consist of, how much work would be involved, and a summary of what the WE already knows on the topic; and second, to determine the competence and willingness of the WE candidate to take on the report task if it should be authorized. Again to insure rapid response, this stage would have to be conducted via telephone.

(6) Action Request. The RRU assembles the information gleaned from Stages 1 through 5 in the form of a request for action by a review panel. The request should spell out some alternatives with estimates of time frame, dollar cost, feasibility of a high quality product, and probable benefits.

The Policy Review Panel. A very important role can be played in this system by a review panel composed not of experts but of reasonably high level practitioners, administrators, or policy makers, probably within the federal agency, itself. The panel would serve at least two functions: one to increase the circle of user involvement including both awareness of the problem and consideration of the results, and second to judge the relative importance of the request and to authorize appropriate action based on that judgment and on the panel's knowledge of the budget and capacity of the RRU.

The panel should be able to meet at least once a week as a group to review and act on requests, or alternatively, they should be available on a day's notice for such a meeting.

(7) Panel Dialogue with User. It will usually be desirable for the panel to have face-to-face discussion with the requester to get a better appreciation of the need and its importance as well as to make visible to the user the importance of making adequate utilization of the findings.

(8a and 8b) Action Decision Options. The review panel should be prepared to take at least four alternative action steps, depending on the importance and generality of the request. Certain requests may be judged of such importance, originality, and long term interest that they call for new initiatives in research and development with appropriate funding (8a). This option, of course, assumes that the panel has sufficient authority or influence to make such an action meaningful. In the event of this action the "rapid response" feature is abrogated and the process essentially reverts to the first operational mode discussed earlier.

Other options (8b) range from (i) curtailment of further action and allowing the information already collected to stand as an adequate response to the user; to (ii) authorizing an expanded or redirected search of information sources and/or experts, limited to one or two days labor in total, leading to a terminal feedback to the user or possibly to a recycling of action by the panel; to (iii) authorization for the RRU to negotiate a contract with the WE for the "Rapid Report."

(9) The Rapid Report Contract. The rapid response service will not work unless the RRU can draw up an agreement with the writer-expert that (a) rewards him adequately for his services (at 1973 prices this probably means a minimum of $500 and a range up to $2,000 depending on the assignment and the seniority of the WE), (b) sets reasonable limits on what he is to do, (c) guarantees that the work will be done quickly (probably with a one-or-two week deadline), and (d) specifies the minimum search activities that will be engaged in. In no case should the product be merely a think-piece without any search and review, nor should it be only a rehash of work the WE has already done, i.e., it should be an original state-of-the-art summary, and analysis with implications for action and utilization by the user should be spelled out as clearly as possible.

(10a and 10b) Final Need Statement Communicated to WE. Once the report contract has been negotiated, the first act of the WE should be to interview the user to gain a clear and full understanding of the circumstances related to the need, in effect to simulate the user's need situation. In this respect, the WE may start out not too differently from the consultant (Mode #3) except that he is aiming at a written product which will be primarily of his own making. An RRU specialist may also have to mediate this exchange by helping the user reformulate his need (10a) and helping in the process of transferring the new formulation from the mind of the user to the mind of the WE (10b and 10c).

(11) The Report Outline. Based on inputs from the contract, from his user interview, and from the preliminary RRU search data, the WE prepares an outline of the problem to guide further search and integration of his report.

(12a and 12b) WE Search Activities. The WE should be expected to make a complete re-inquiry of the R&D information system possibly utilizing a fresh set of descriptors based on his outline. How much he can do will depend partly on the adequacy of such systems, themselves, of course. Thus, he should not be expected to search many diverse sources nor to use material which is costly and time consuming to acquire and digest.

The WE should also be expected to indulge in some consultation with knowledgeable colleagues and others who have expertise in the topic area (12b). Probably, there should be allowance in the contract for the WE to pay for such additional consultation up to perhaps one or two hundred dollars.

(13) and (14) Assembly and Production of the Report. At least 1/2 of the total effort of the WE should be spent thinking through the problem and spelling out alternative solutions based on R&D whenever possible. This we see as essentially a creative act for which the highest order of skill, sophistication, and sensitivity are required. *The success of the system stands or falls on the quality of the integration and the writing.*

(15a and 15b) Communication of the Rapid Report. The original requesting user should be the primary recipient of the report and should receive the report in writing and orally (15a), allowing for dialogue about understanding, interpretation, and possible applications. The RRU may also want to participate in or monitor this feedback event.

The report should also be entered into the active file of the RRU (15b) for possible future use either in the rapid response service or in dissemination activities (Mode #2) designed to reach users in circumstances similar to those of the requester. Because of the checks included in the review process and the participation of the policy panel, there will be every reason to believe that the report will have widespread utility beyond the particular needs and interests of the original requester.

(16) Absorption. Understanding and recognizing the full implications of the report is a process that will likely take many days or months after the report is submitted. In this internal activity the user may wish for and solicit help from the WE, the RRU, or members of the policy review panel, but in any of these exchanges he is on his own to initiate and, if necessary, to pay for the help he desires. Conceivably, for example, the user and the WE may be stimulated to submit a joint proposal for a research project or a demonstration experiment of some kind to test out and carry forward ideas contained in the Rapid Report. Hopefully the review panel would be in a position to facilitate or underwrite such actions.

(17) Utilization. Final disposition and impact of the report is again in the hands of the user. Hopefully, if Stages (1) through (16) have been managed successfully, he will have material that is very important and relevant and he will have it within a few weeks of the time he originally requested it. Potential applications will have been discussed with the WE and earlier with the policy review panel and the RRU. But beyond this, this service does not go. Conceivably, of course, by combining Mode #3 and Mode #5 comprehensive utilization services could be provided which include such functions as help in designing and modelling specific changes, and support for risk-taking. Such intensive follow-on services are not outlined in Figure 1.7.

(18) Feedback on Impact. This operational mode, like each of the others, requires a continuing built-in cybernetic mechanism. The success and failure of each step in the sequence should be evaluated and the system should be reorganized accordingly. Most important is the feedback on the results of the total process in terms of user satisfaction and specific evidence of successful utilization.

Cost and Benefit of a Rapid Response Service. While it may seem that the costs of a system such as that described above are very high, they may be offset by a number of considerations. First of all, the reports have the potential of being *genuine contributions to knowledge* and may be worthy of publication and of special dissemination to a wide community of practitioners, policy makers, and researchers. As mini-research projects, in themselves, the reports may also be comparatively cheap. Finally, with the review process included, there can be strict limits on the number of requests serviced and the quality of the request.

Comparing the four D&U agencies in our study, we find that each in fact does produce highly targetted, interpretive state-of-the-art summaries from time to time often in response to urgent requests from high level persons in their own agency. Yet these requests are responded to more or less in an ad hoc manner. There is no routine, no delivery system, no real quality control mechanism, and no clear budgeting accountability for most of these activities. Thus, it would appear that a carefully designed rapid response service would be an especially appropriate mechanism to initiate, at least on an experimental basis as a service to government policy makers, if to no other users. Thus, the decision makers in government bureaus could at least be on an equal footing with their neighbors in the Congress. Indeed our pilot survey question on information "crises" indicated that the Congress as well as high government officials represented the major stimuli and audiences for "crash" information.

It should also be noted that one of the four D&U units does have a somewhat routinized program of studies comparable in some ways to the Rapid Response Service, this being the "Targetted Communications Program" of NCEC. There are important differences, however. For example, initiative lies heavily with the writer-expert both for establishing and defining the need and for disseminating the results. Project costs are accordingly 10 to 100 times greater per product while relevance to particular needs of particular users is still not assured. The *Rapid* response feature is also not built into this program, most projects being planned for completion in a matter of several months.

Of the eight modes proposed in this analysis, it seems to this writer that this one has been the least tried and is perhaps the most ripe for experimental try-out by those who wish to bring significant improvements to the D&U process.

6. Continuous Flow Dissemination

a. *Periodicals*

Most traditional channels for the communication of research findings involve continuous print dissemination via periodicals. Most federal R&D programs, directly or indirectly, intentionally or unintentionally, provide a major source of input to these media. Actually the journals play at least four distinct functions in the total D&U process. First, and perhaps most importantly, they are a means of *archiving* research material in a general or specific discipline. Second, they are often (but not always) used as a means of *screening* material for scientific quality or, in the case of the popular journals, quality and general interest. Thirdly, they are used as a measure of scholarship and *academic performance* especially as part of university promotion policy. Only fourthly and by no means most importantly are they vehicles for direct *dissemination,* and least of all are they vehicles of communication from the R&D community to practitioners or policy makers.

Recognizing these facts the four D&U units we have studied have introduced various popularized media to provide a more or less continuous flow across the gap from research to practice, or from research to policy. Some popular magazines such as Psychology Today and Society attempt to reach an even broader audience. We believe that the effects of these bridging media may be quite important, particularly in building general *awareness* of available R&D and in educating some users to be more sophisticated about R&D processes and what they can and cannot offer. On the other hand, continuing dissemination usually does not do much for the particular user, either in homing in on his real problems or providing the kind of support necessary for utilization.

Thus, while continuous flow can no doubt be improved tremendously by adding new newsletters in flashy formats with better material more adequately condensed and analyzed from the potential user's perspective, it is hard to see it playing other than a supplementary role to other operational modes.

b. *Selective Dissemination of Information (SDI)*

Several information services in recent years have made limited experiments with what is usually called "selective dissemination," meaning the regular dissemination of newly published material to various cooperating users based on a profile of particular user interests and information needs. This targetting approach may go a long way in making some users more attentive and appreciative of what they get sent, but we still see this essentially as a variant of continuous flow dissemination. There is individualization but only in a general sense and not targetted to a particular user problem *at a particular time.*

While SDI does not, in itself, represent a total answer to either targetting information or a D&U system, it might well be extremely functional as an additional element in modes #3, 4, and 5 in each of which, over time, a fairly sophisticated profile of user needs is accumulated and, in the case of #4 and 5, where an important backlog of packaged information is accumulated continuously. Thus, past users with an established need can get newly created or updated packages via SDI whenever a new user enters the scene with a similar request.

One interesting variant on the SDI approach is the distribution of literature or summaries in card or punched hole formats and with cataloguing-indexing notations so that each user can accumulate his own easy-reference file in a box or loose-leaf binder. With this arrangement the SDI potentially comes much closer to being a localized and personalized instant retrieval system or "hot file." The success of such a system would depend in part on the degree to which appropriate user habits of filing and storing such tidbits could be built up and maintained. It would also depend on the narrowness of the user's interest and the amount of information available. Either a wide interest range or a large volume of material would make a user's file too large and too expensive to be practical, either for the user or for the servicing agency.

7. User-Centered R&D

a. *Ad Hoc User Research Services*

It can be argued that user needs are often so unique and so much tied to a unique set of conditions that all past R&D is mostly irrelevant. If this is the case and if the users happen to be wealthy, very influential, or designated by someone as very important, they may call for a complete cycle of research and development tailored to themselves. Typically market research is of this type as is much organizational research and some federal policy research. Generally such ad hoc research fits the pattern of operational mode #1. Certainly such research is unlikely to encounter relevance problems when it comes to the utilization stage, but there can be serious problems with *timing* (it takes time to do good research, even more time to do good development) and *cost*. It would seem preferable for these reasons to plan such ad hoc research so that it does have some generalization potential and to conduct it in conjunction with and supplementary to a rapid response system as is suggested in Stage 8a of Figure 1.7.

b. *User Collaborative R&D*

Another alternative which is essentially an elaboration on mode #3 assumes that past research may be somewhat relevant but that users will never grasp the full implications and move toward utilization unless they, themselves, get into the act, planning and conducting their own research, posing or helping to pose the questions asked, and analyzing the data right along with the researcher. Here, too, there is a lot of logic on the training and utilization side of things, but the costs of going through such a process for every client are staggering. The outcomes are also somewhat uncertain since collaborative R&D requires an unusual combination of research, development, and consultation skills on the part of the outsiders.

"Organizational Development" sometimes describes a special type of collaborative R&D involving social scientists with survey research, small group training, problem-solving and consultation skills in various combinations working with the user organization as a whole. The type of involvement in problem-solving that can be achieved with this approach far exceeds the consultation of mode #3 or the information-only approaches of modes #4 and 5.

OD is especially attractive and relevant to D&U in promising to make organizations more *open* to new influences from within and from without. "Inside" influences might include the attitudes of their own members, and an honest appraisal of their own needs, objectives, and their own potential as people. "Outside" influences might include new images of potentiality, concern for customers or for the environment, learnings from what other organizations like them are doing and perhaps R&D generated elsewhere. On the other hand, these promises of OD are not consistently realized with present techniques, and they assume a level of commitment by user which a D&U unit is seldom in a position to command. Thus in SRS when an OD unit was established to assist internal management, it had no direct relationship with the research utilization unit; in the Manpower Administration the utilization laboratory (at University of Michigan) which focused on OD techniques had great difficulties gaining access to user organizations, and when they did, the extent of openness to outside R&D which resulted was minimal.

It is still somewhat unclear how OD techniques can relate to a larger plan for comprehensive D&U services. The promise remains, and the desirability of careful experimentation is evident.

8. Natural Network Nurture

The D&U unit never comes on the scene before a flow system of some kind has been established. There is always some sort of network in being already, a network of researchers forming into loosely integrated "invisible colleges" around topics of mutual interest and networks of users at various levels, often formalized as professional organizations of one kind or another. Such "natural" networks represent a kind of D&U system and they also represent an opportunity for a newly arrived low-profile low budget federal D&U unit. The D&U unit can move in a variety of ways to improve the functioning of this natural flow system and push it gently in the direction of utilization. It can do so by subsidizing special journals, supporting special utilization conferences, and providing small grants to promising young investigators to steer them into greater involvement with the D&U process. These actions are not necessarily trivial if they are managed and orchestrated with full knowledge of the weaknesses of the "natural" network. Indeed the most serious weakness of existing networks is likely to be the formal and informal clustering of practitioners and researchers into separate camps divided by mutual disdain, suspicion, and ignorance. Federal agency staff members can themselves play a very positive role as "honest brokers" between the two camps and can also lend support to others to do the same.

We have stressed in the preceding discussions and in each of the diagrams the fact that any operational mode exists within a much larger information flow environment which includes thousands of messages, many generated in the dim past, and countless actors in the practice world and the R&D community. Almost all of these messages and actors are completely outside the control or cognizance of any single D&U agency, yet they profoundly affect what it can do and how well it can function in any mode. Hence, there is some justification in developing strategies which exploit this larger social-informational environment to the fullest.

Combinations

There is no reason, in theory, why one D&U unit could not operate in all modes simultaneously, assuming unlimited staff and resources. There is nothing inherent in any one approach which makes it incompatible with any other. The greatest divergence may come between modes #1, 2 and 6 on the one hand and #3, 4, 5 and 7 on the other, since the latter are clearly user intitiated or user-centered modes while the former are more or less product or research centered. All modes share a number of assumptions, e.g., (1) that research and development provide the most valid and reliable clues to improved practice, (2) that therefore effective transfer of R&D to practitioners should be made, (3) that this transfer can be improved and speeded through systematically planned interventions, (4) that user needs, broadly defined, should guide and control what R&D products are transferred to users, and (5) that user attitudes and effects on users should be used to redirect the R,D,D and U efforts.

Manifestation of the Operational Modes in the Agencies Studied

When we turn now to look at these eight alternatives in comparison to actual D&U unit policy and practice, we find an interesting pattern, namely that none follows any of these modes with any consistency while all dabble in each mode to some degree; NCEC with the most resources has been able to dabble the most.

The reasons for this lack of pursuit are more than purely budgetary, however. One additional factor has been the lack of clear and well developed models of how a system ought to function; another may have been confusion and changing signals from policy makers regarding the proper role of a D&U unit (suggested by the constantly changing names for the units and continually oscillating budget allotments). It is not fair to criticize what has been done by the unit staffs under these circumstances; indeed, to the contrary one should stand in awe that so much has been done in so many areas with such modest resources, witness the few blank cells of the side-by-side functional comparisons in Chapter 4.

How to Build on What We Have

Looking forward rather than backward, we should think how to organize and plan a step-by-step progression toward any one of these ideal operational modes. The first step, it would seem, would be to decide as a matter of policy which mode deserves the highest priority. Among factors entering such a determination should be (a) potential payoff, (b) capacity to sustain a consistent policy of support for the activity until a fair test has been made, (c) the existence of an appropriate backlog of knowledge (particularly necessary for mode #4) or some high quality R&D products (particularly necessary for mode #2), (d) clear precedents for the activities (not so true for modes #4 and 5), and (e) anticipated start-up and maintenance costs.

IV. IMPLICATIONS FOR CHANGING THE MANPOWER D&U SYSTEM

A. TACKLING THE MEASUREMENT PROBLEM

This project has laid the basis for a systematic and detailed analysis of D&U functions. One outcome of such an analysis ought to be a monitoring and management procedure for all D&U activities which allows for a coherent accounting and reporting of achievements and a pinpointing of problems and deficits on a regular basis. Two steps need to be undertaken to develop such a procedure: first, the tentative *quantification* of major elements of the descriptive model, and second, the development of appropriate criteria and measures of D&U *effects*. Let us consider each of these steps.

1. Quantification of Model Elements

Chapter Four illustrates in some detail the range of activities that might be undertaken by a "maximal" D&U unit. One can get from the side-by-side comparison of the four agencies some notion of the relative emphasis and investment in each of these activities, but thus far no numerical accounting has been rendered. If the category schema is deemed satisfactory as a reasonable first approximation, the next step should be to begin making estimates for each category of (1) staff man-hours invested, (2) contract funds expended, (3) number of products involved, (4) number of persons affected, etc. At the beginning of this process there should be less concern for precision than for exploring the possibilities of quantification. This quantitative overview when completed should give a number of clues as to where operations are strong or weak, productive or unproductive, costly or economical, and thus should be a useful planning tool. However, the quantitative overview for the first two or three years should be treated very tentatively and revised continuously as more sophisticated ways of measuring and counting functional emphases emerge. The segments of the model, itself, will have to be weighted according to the set of priorities laid down for the agency, e.g., if primary responsibility for "needs assessment" resides elsewhere in the agency, then presumably it should receive a far lower priority rating than, let us say, transformations.

2. Developing Satisfactory Measures of D&U Impact

An analytical quantitative monitoring process will never be very convincing until it can be tied to measures of output or impact which have some widely recognized meaning and value. To attack this problem head-on, the Division should contract for one or more projects designed specifically to seek out and spell out such measures. It is certain that outcomes cannot be measured simplistically by counting the number of publications sent out or the number of persons attending a conference or the number "satisfied" with what they have heard or read. Studies to develop measures of research utilization consequences should start out by composing taxonomies which cover the full range of possible impacts, immediate, short term, medium term, long term, positive and negative. They should estimate which among this array of consequences is fully definable, observable, recordable, measurable, or quantifiable. The purpose of the taxonomy would be four-fold. First, it would act as a source for developing various cost-benefit formulae from which the Division could select the one with which it feels most comfortable; secondly, it would provide a wider context within which the adequacy of any particular formula can be judged. For example, it is likely to be argued that a given formula overweights certain kinds of impacts, e.g., number or requests or number of copies sold, merely because these particular "impacts" are quantifiable. The taxonomy tests this argument by showing us what the formula leaves out. It also serves a third function in providing another basis for choosing and clarifying Division goals,* and a fourth function in pointing to impacts for which the development of a measurement capability is most important, so that cost benefit formulae can be improved.

The measurement of utilization impact will be the single most vexing question for D&U system managers in the middle 1970's. As D&U functions have become clearer in the late 1960's and early 1970's, we have begun to see the promise of a fully integrated system of D&U as a separate and equal segment of the societal problem-solving process alongside "Research and Development," but to achieve this status, D&U units will have to persuade the policy makers with more than logic and more than elaborate images of what the ideal system might look like. They will have to demonstrate convincingly that existing sample efforts have impressive benefits which far outweigh their costs.

B. CHOOSING PRIORITIES

In beginning the implications with the measurement problem, we have, in effect, asserted a first priority: that the Division should first know itself and be able to describe itself in specific terms. It is the first priority in part because priorities for self improvement cannot be meaningfully established without a knowledge of what exists now. Beyond the measurement, itself, however, there are a number of other steps that can be taken to develop priorities.

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*Division goals can be defined in terms of either desired impacts (as derived from a taxonomy of consequences) or from an analysis of functional activities (as suggested in Chapter Four) or optimally a combination of the two.

1. How

The process of choosing priorities should, as much as possible, be (a) collective, (b) open, (c) tentative, (d) specific, and (e) documented. It should be *collective* in that all persons who have a professional stake in the Division should participate in the formulation, and should be allowed to develop, as much as possible, a sense of identity with and ownership of what emerges. It should also be a process which is *open* to the ideas of relevant outsiders, experts and prime users, and to the ideas and the assent of relevant decision and policy makers inside the MA. It should be cast in a clearly *tentative* form because of the tentative status of our knowledge of D&U and the resulting necessity to change priorities as we get a clearer idea of what is needed and what is desirable. Finally, it is important to make a *specific documentary* record of priorities to serve as a continuing guide to day-to-day action and as a means of displaying the mission of the Division to relevant others.

2. What

Five sections of this report provide a basis for five different types of priority setting, and it would seem desirable to enter such a process for each type as suggested below.

a. Preferred Operational Mode(s)

At the broadest level the Division needs to decide which among the eight operational modes described in the previous section of this chapter best describes (a) the way they operate now, and (b) the way they would like to be operating in the future. This is of the highest importance, first, because the operational mode largely determines the set of specific activities and subsystems which a D&U unit is required to have and, second, because no D&U unit in the foreseeable future will have the resources to perform satisfactorily in all eight modes simultaneously.

b. Define Gaps and Targets for Improvement Among Division Activities

Within the context of the preferred operational mode, the Division staff might then examine the portrait of current activities, function-by-function, as summarized in the second column of the comparative analysis in Chapter Four. Preferably this will be done after that analysis is further specified and quantified along the lines proposed in Section IV-A-1 above. This inspection should point to certain elements as underemphasized and certain others as overemphasized, further suggesting gaps and targets for improvement either in terms of upgrading, expanding, or phasing out.

For example, a great deal of energy invested in generating periodicals would be fine if the continuous flow mode were top priority, but if knowledge-based problem-solving was top priority, followed by instant response and rapid report, this would suggest the desirability of deemphasizing or phasing out these periodicals.

c. Define Gaps and Targets for Improvement in the Research Information Flow Network

In various sections of this report starting with Figure 1.1 and continuing through Figure 3.14 and Figure 5.1, we describe both ideal and actual configurations of linkage which comprise the Division's social environment. The data related in Figure 5.1 as well as Table 7.11 point to specific points where the linkage is weak or problematic. Each of these suggests an area for future emphasis, but the Division should decide which interfaces are most vital and most relevant to their overall mission.

d. Choose Aspects of the *Process* of D&U Where Improvement is Most Desired

Chapter Seven of this report, which deals most directly with the overall process of D&U rather than with the specific linkages or the functional sequence of activities within it, provides several clues to areas of needed improvement. For example, Figure 7.6 displays ideal-actual comparisons on 20 procedural aspects for the network as a whole. Presumably the items with the largest discrepancies are a starting point for change, but Division staff need to review these items in terms of their overall priorities, select those on which there is the highest consensus, and then proceed with the planning of specific changes to reduce the discrepancy and enhance the performance of the network. The H-E-L-P S-C-O-R-E-S analysis provides an additional or alternative basis for working on "process" issues. Judging by our interview responses on these ten dimensions, increased "structuring" of the Division's activities might be in order. The entire priority setting process, if adopted, would certainly be a significant movement in this direction.

e. Prioritize the "Improvement Options" of Chapter Eight

The last chapter contains a discussion of the pros and cons of 30 possible improvement options for a D&U unit. The options are ordered sequentially in terms of the problem-solving linkage model used to compare the activities of the four D&U agencies. Division staff might read carefully through this list, rating or rank ordering each item on a scale of probable impact, cost, feasibility with present resources, etc. Separate ratings could then be pooled and discussed, internally and externally, prior to a final determination of priorities. Preferably this prioritizing of specific task areas would be preceded by the other types of priority choosing activities suggested in items "a" through "d," but this need not be the case.

C. IMPROVING LINKAGE WITH POLICY MAKERS AND LINE AGENCIES

As a matter of principle, we would prefer not to point to specific recommendations without giving the Division a number of options to choose from. On two points, however, we would prefer to be more explicit because in one we sense that there is a serious problem crying out for solution, and in the other there is an opportunity which should be seized upon.

The *problem* area is the relationship of the Division to the Federal, Regional, and State Offices which constitute the "line" agencies in the Manpower system. There seems to be some consensus that a gap exists here which is both informational and interpersonal, and it deserves special attention. Print, personal, and group exchanges with all levels of this "line" system should be increased, joint research utilization conferences especially for their benefit should be organized, and collaborative projects involving their leadership should be encouraged.

The *opportunity* lies in the area of providing improved services upward in the Manpower Administration. The Division has generally enjoyed good relations with higher layers of management in MA and with the Office of Planning Evaluation and Research (OPER). Hence, there should be some openness to providing these important audiences with some innovative D&U services on a trial-experimental basis. The two which we would propose from our study of a range of possibilities would be the Daily Newsletter (Improvement Option #18) and some scaled-down version of the "Rapid Response Report Service" proposed as "Operational Mode #5" earlier in this chapter. Such a service has never been operationalized outside of the Congressional Research Service and seems to provide a unique and novel method for transforming research for use based on user needs. The chief drawbacks of the system appears to be the cost of servicing many users and the availability of writer experts. These drawbacks are present to a much lesser degree if the designated users are restricted initially to policy makers in problem areas where an R&D program has been operating for some years.

The survival and advancement of the D&U function in our society depends to a very large extent on the good will, understanding, and support of government leaders. It is, therefore, of great importance to provide these leaders with first hand successful experiences with research utilization by way of a well planned and competently executed direct service activity.

If through such demonstrations we can prove the worth of D&U as a distinct enterprise, we will be given the opportunity of following through on the many promising but costly system improvement opportunities which are detailed in this report and elsewhere.

CHAPTER II

D&U UNITS: ORGANIZATIONAL PROFILES

I. DIVISION OF R&D UTILIZATION/MANPOWER ADMINISTRATION

A. LEGISLATIVE MANDATE

The legislative authorization for the Manpower Administration's research activity came from Title I of the Manpower Development and Training Act (MDTA) of 1962, which was later amended to include authorization for the experimental and demonstration (E&D) function at the federal level. Additional funds were added to the Manpower research program under Title I of the Economic Opportunity Act (EOA) of 1964 in connection with work experience and training programs, as well as the Work Incentive (WIN) Program under Title IV of the Social Security Act. With the additional sources of funding, the total research budget has increased to about $23 million.

B. PURPOSE OF RESEARCH AND UTILIZATION ACTIVITIES

The purpose of Manpower Administration Research and Development (R&D)* has been described as the development of "information and methods for dealing with the problems which interfere with full, productive, and satisfying employment for all American workers, so that Manpower programs will both enhance the workers welfare and strengthen the nation's economy." ** The goal of utilization efforts has been closely related to the program-oriented mission of Manpower R&D: to develop a manpower system for the disadvantaged and other target groups which is "...continually absorbing and using new ideas, new techniques, new forms of organization, new ways of delivering services." ***

C. ORIGIN

In 1966, Dr. Curtis C. Aller, the Associate Manpower Administrator for Policy, Evaluation, and Research, issued orders that R&D utilization activities must occur both within the E&D program of the Office of Special Manpower Programs (OSMP) and the Office of Manpower Research (OMR). A small Clearinghouse and Utilization Group was already established in OMR and a Division of Utilization was developed in OSMP.

Efforts in this area before the utilization requirement included a contract for "Operation Retrieval" to synthesize earlier E&D products, incorporation of special arrangements for utilization into some contracts, and a clearinghouse designed to assemble information on automation and technical change. Seeds of the activities of the present Division of R&D Utilization were developing with the operation of both utilization units in late 1966. Dr. Edward Glaser, Director of the Human Interaction Research Institute in Los Angeles, planned and conducted a multi-agency seminar which was sponsored by the Manpower Administration in 1966 to share agencies' utilization strategies and develop a "doctrine" of utilization for the Manpower Administration.

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* "Development", as used here, includes both experimental and demonstration projects.

** Experimental, Demonstration, and Research Programs, 1970 (author unknown).

*** Memo written by Judah Drob, March, 1969.

The two utilization units were responsible for dissemination and utilization (D&U) activities within the E&D and research arms of the Manpower Administration. OMR was responsible for the more academic-oriented research, whereas OSMP administered the experimental and demonstration programs. In April of 1970, the staffs of the two offices, OMR and OSMP, were merged to form the Office of Research and Development (ORD) for the purpose of providing a more "integrated" research and development program. At this time, the staffs of the two utilization units were also joined to form the present Division of R&D Utilization.

D. HIERARCHY IN THE MANPOWER ADMINISTRATION

The Manpower Administration is only one of the major administrative and program areas of the Department of Labor. It contains staff with various functional orientations. The Assistant Secretary, the Manpower Administrator, and the Deputy Manpower Administrator's Offices are primarily concerned with policy and planning decisions. The Office of the Deputy Manpower Administrator also serves as the point of control for all contacts and communication channeled to the regional offices and the State Employment Security Agencies, with clearance procedures required by the Office in order to insure that all directives and instructions sent are congruent with present department policies.

The program people at the federal level, e.g., United States Employment Service (USES), as well as the regional offices, serve as intermediaries to the state and local programs funded by the Manpower Administration (such as State Employment Services, Neighborhood Youth Corps, WIN program, etc). The decentralization of some authority and funds to the regional and state levels has shifted the functions of program people at the federal level in that they now provide staff support and establish general guidelines and policies for the state and local operating offices.

The Office of Planning, Evaluation, and Research (OPER) serves both policy makers and administrators, as well as program people in the Manpower Administration. OPER consists of the Office of Research and Development (ORD) and the Office of Planning and Evaluation (OPE). OPE staff provide assistance for planning and evaluation of the Manpower programs; one division provides policy advice and research information to the Assistant Secretary and other decision makers, while another division performs or contracts to have evaluation studies done of various components of the Manpower programs. This latter function links them to the program people, such as those in USES, OEDP, the WIN program, etc. ORD staff provide assistance to the research, experimentation, and demonstration efforts of the Manpower Administration; it was estimated that 95% of the research done in the Manpower Administration is administered by this Office. Within ORD, responsibilities for the research, experimentation, demonstration, and utilization functions are allocated separately among five divisions, one of which is the Division of R&D Utilization.

E. PRESENT OPERATIONS OF THE D&U UNIT

1. Staff

As of November of 1971, the time of interviewing, the Division of R&D Utilization consisted of the Division Chief, six other professionals, and three clerical staff. The backgrounds of the Division's staff members are varied, although most have been working in the Department of Labor for numerous years. Rather than coming in as D&U specialists, they generally have knowledge of various substantive areas in Manpower programs.

2. Funding Base

The Division does not have control of its own budget; instead, the R&D budget is pooled at the ORD level where an annual R&D work plan is developed among the divisions and the Director and Associate Director of ORD (input also comes from program people at this time). The Division presently has $1.75 million in current contracts, out of a total of $23 million for all of ORD.

3. Functions

Division staff members are active in R&D contract and grant work both funded through the Division and outside, and in dissemination and utilization activities. All of the professional staff work with other divisions and contractors through the "buddy system", in which they are generally assigned to various projects on the basis of their substantive areas. Through this system, they collaborate with project officers in other ORD divisions during the life of the projects in order to plan utilization strategies and define user groups for the research products. The largest percentage of staff time is spent in this activity; estimates ranged from 10 to 66%, with an average of about 50%. Staff members also serve as project officers for those contracts administered directly by the Division in addition to other individual assignments such as various tasks with written output (the annual R&D projects book), and liaison or "linkage" roles.

The secretarial staff members of the Division play an important role in dissemination activities through maintaining a library of all completed project reports, mailing copies of reports on request, and maintaining and enlarging a mailing key which serves as a basis for sending out various Division products. They also have become involved in project record keeping and work on the annual projects book, which involves a good deal of contact with other divisions.

Manpower Administration staff outside of the Division who were asked to describe their perceptions of the Division's functions frequently mentioned the following: distribution of research results to users within and outside of the MA; summarization and other types of transformations of research reports;

development of utilization strategies at various points in the process of research production, dissemination, and utilization. Staff members who have worked with the Division through the "buddy system" more frequently mentioned the Division's responsibility for development of utilization strategies; whereas those not directly involved in the "buddy system" more frequently recognized the Division as a disseminator.

F. OTHER MANPOWER D&U EFFORTS

The Division of R&D Utilization is not the only place within the Manpower Administration charged with disseminating knowledge and getting it used, although it has been identified as the focal point of such activities. Some staff in other divisions of ORD have actively participated in utilization activities of the Division.

The Division of Evaluation in OPE, which performs or contracts to have evaluation studies done on Manpower programs, has set up a system to implement findings of the evaluation studies. This Division meets with program people at various points in the project and sends reports to the Division of Policy Studies and Analysis in OPE; the latter Division is charged with providing information and advice to the policy makers of MA. The Division of Policy Studies and Analysis summarizes results and spells out policy implications of the evaluation studies for the Assistant Secretary and program people.

Some program people in USES and OEDP perceive themselves as having responsibility for utilizing the products of R&D as well as of evaluation. With the assistance of ORD, they have used their series of letters to the field to relay some research information. They also distribute some R&D materials, such as handbooks.

The Manpower Administration Office of Information also serves a general dissemination function. Its focus is that of providing published information of a more general nature rather than relaying only technical R&D information, which is more the function of the Division of R&D Utilization.

The Experimental Manpower Laboratories sponsored by the Manpower Administration were also mentioned as sources of D&U activity. The Experimental Manpower Laboratory of Corrections at the Draper Correctional Center in Montgomery, Alabama, has been particularly active in dissemination efforts.

G. THE KNOWLEDGE BASE

The Division of R&D Utilization has a clear focus on that R&D information produced by the Manpower Administration. This means primarily the research, demonstration, training, and experimentation knowledge produced through contracts and grants sponsored by ORD, excluding evaluation research sponsored by OPE.

The topic areas represented by ORD contracts and grants reflect the primary manpower issues of the day. From an earlier emphasis on study of and programs for the benefit of those already within the labor market (e.g., the effects of automation), which reflected the statutory language, emphasis has shifted to expanding the market by extending services to the disadvantaged and under-employed (e.g., the emphasis on minorities, employment for welfare recipients, training for youth, women, etc.).

As we move to those pieces of knowledge with which the Division works most actively, we see two different patterns emerging: first, there is the knowledge produced by ORD grants and contracts coming from the other divisions ("R&D on manpower"); and second, that produced by contracts to develop new or better ways to insure that the first type of information gets disseminated and used ("R&D on utilization"). In day to day activity, however, more total staff time appears to be spent in assisting in the dissemination and utilization of manpower R&D, and linking with the project officers in other divisions to develop dissemination and utilization activities.

The "buddy" efforts, in the recent past, were organized by project officers (one staff member working with most or all of the projects of a few project officers), but recently the trend has been toward organization by topic area (staff member taking projects within his or her fields of expertise, thus working with more project officers). A wide variety and a large number (about 190) of R&D projects are thus linked to by Division staff, running the subject matter gamut from black employment to vocational education, women's programs to WIN research conferences. Much of the involvement comes as these projects near completion, and usually consists of deciding (with agency and research personnel) what to do to get which results to what potential users.

There is considerable variety among the D&U projects initiated by the Division of R&D Utilization. Most, however, take the form of attempts to repackage information. Included here are projects to produce jargon-free summaries of R&D results, syntheses, and state-of-the-art papers. This activity allows the Division to cover, secondarily, the knowledge which is available outside of its mandate, although the state-of-the-art papers produced thus far have been limited to subjects where ORD is the major producer of the R&D reviewed. Other work involves exploring effective communication media: an attempt to target communication for special audiences, development of self-instructional courses using tape cassettes or films as a medium. The Division has also sponsored contracts designed to employ user groups in transmitting research information. Special provision for publicity and dissemination of effective programs are built into some projects. Finally, some work has been done on conceptualizing the knowledge flow process (e.g., through conferences with outside experts in the field). In balance, however, more of the R&D initiated by the Division attempts to actually improve dissemination and use of knowledge than to investigate the D&U process itself.

H. AUDIENCES

1. Intended Clients

The intended clients,* as perceived by both Division of R&D Utilization staff and other staff within the Manpower Administration, include a complex system of multiple user groups inside and outside of the Manpower Administration. Policy makers, researchers, professional manpower practitioners (ranging from program administrators at the federal level to state and local program operators), vocational educators and other government agencies, employers who participate in Manpower programs, the ultimate recipient of Manpower programs, and the general public are general user groups identified. These user groups obviously cut across agency lines, since the Manpower program interfaces with a variety of other agencies (Vocational Education and Manpower Development and Training - MDT - in the Office of Education, Vocational Rehabilitation in Social and Rehabilitation Services, etc.) as well as private associations and organizations. It was emphasized that intended user groups in other agencies are not necessarily located at the federal level; rather, the intended clients include the state counterparts of other federal agencies.

ORD staff, particularly the staff of the Division of R&D Utilization, then have the responsibility of providing a flow of information to "intermediaries" in other divisions and agencies as well as to their perceived clients. This responsibility for multiple client groups was reflected in the perceptions that Division of R&D Utilization staff members have of audiences to be served: although the primary emphasis was placed on policy makers and program officers within MA, such varied user groups mentioned included practitioners outside of the Manpower Administration (state vocational education and MDT offices, local employers, private industry, private associations, and organizations), local government offices, and in a few cases, researchers. The Division staff members did not view the general public and the beneficiaries of manpower services as clients within their realm of activity.

2. Actual Clients

In addition to ascertaining the intended client groups of the Manpower Administration, an attempt was made to assess the actual groups served by the staff of the Division of R&D Utilization and others. To this end, interview responses were screened to identify types of media used to transmit information, types of user groups to which such media were directed, and also to identify the weight of efforts to various user groups.

It is noteworthy that a wide range of media is employed to reach various user groups, both oral and written. The media range from reports themselves, to R&D information that has been transformed to varying degrees (monographs, memoranda, etc.), to various forms of oral transmission (meetings, conferences, informal personal contacts). Oral modes of reaching users were most often mentioned by Division staff members as a source of transmitting information, and this fact relates to the emphasis placed on this medium by various Division staff. In relating types of media employed to specific types of user groups, we can attempt to define the actual user groups and emphasis placed on them in terms of the different types of activities employed.

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* Taken from a specific question on the questionnaire: "Who are the intended clients of such research?"

a. Policy Makers

Although policy makers were a primary intended client group of both Division staff and other staff, some of those outside of the Division are more closely linked to the policy group by their job roles. The Division, in fact, views ASPER and OPE as channels to the policy makers, and attempts to feed research information to the policy makers through these channels (e.g., using Advance Research Briefs). However, with their indirect linkages, the staff of the Division of R&D Utilization have noted that this policy user group has not been adequately served for a number of reasons: staff size and time limit their ability to cover all client groups adequately; some Division staff members did not feel that they had adequate knowledge of the policy concerns in the Department of Labor.

b. Practitioners

A wider variety of means were employed to reach practitioners, particularly those within the Manpower Administration. The range includes everything from outstanding reports, to handbooks, to oral modes. It should be noted that the actual mode employed to reach practitioners by Division staff is carefully selected on the basis of how wide or intensive the impact of the mode will be. Dissemination of reports, periodic listings of reports, the annual projects book, etc., are employed to reach the widest possible range of Manpower practitioners at various levels, from USES staff to local mayors' offices. Other means, such as conferences, handbooks, and even on-site visits of demonstrations have been used by Division staff to impact smaller groups of practitioners.

c. ORD Staff

This "unintended" client group also obtains information and services from the Division of R&D Utilization with informal, personal contacts by far being the most common means used. The "buddy system" serves as a vehicle for these contacts as well as other, more formal meetings. One staff member described the relationship between the Division of R&D Utilization and other divisions in ORD as "interactive", with many utilization efforts crossing Division boundaries.

d. Researchers

Different modes of communication were used in reaching this group, although for the purpose of informing them of research, written modes were most common. Summary modes such as the annual research projects book are prime media. Although researchers, as a group, were not mentioned frequently as intended clients, it was stated that a large proportion of requests for reports came from universities.

e. Consumers and the General Public

Two user groups which were reported as being sent the least information output from ORD and the Division of R&D Utilization are the ultimate beneficiaries of programs improved through R&D (the job seekers) and the general public, mainly because the Division does not consider these groups to be part of their primary client system. These user groups would require more general information, and the Division is not equipped with the resources to handle the function of providing such general, non-technical information on a systematic basis. Nor would doing so contribute much to improving Manpower policies and programs, which is ORD's overriding objective.

II. RESEARCH UTILIZATION BRANCH/SOCIAL AND REHABILITATION SERVICE

A. LEGISLATIVE MANDATE

Legislative authorization for the research and demonstration (R&D) programs of the Social and Rehabilitation Service (SRS) comes from a variety of sources. Section 4 (a)(1) of the 1954 amendments to the Vocational Rehabilitation Act authorized research to seek solutions to vocational rehabilitation problems.* Section 1115 of the Social Security Act (SSA) authorized demonstration projects in the area of public welfare administration to be funded only to state agencies, and Section 1110 authorized R&D designed to help solve problems besetting welfare clients; the latter authorization includes support for eight Regional Research Institutes in Social Welfare. Section 426 of the 1960 amendments to the SSA authorized funds for research in the area of child welfare, and Title II, Section 202 (8) and Title IV, Section 707 of the Older Americans Act authorize research in the general area of aging. The Agricultural Trade Development and Assistance Act (P.L. 480) authorizes use of U.S. government-owned foreign currencies for research in other countries.

The budget for the SRS research programs has increased from $51 million to $59 million in the last three years. For FY 1970, Rehabilitation Research included a large share, with about $20 million for research and $10 million for the Research and Training Centers. For FY 1973, the SRS research budget will be $64 million.

Legislation authorizing dissemination of research and information includes the following: Section 7(a)(3) of the Vocational Rehabilitation Act (VRA) for information, Section 7(c)(2) of the VRA for research, Section 202 (1&6) of the Older Americans Act, and Title III, Section 304 of the Juvenile Delinquency Control and Prevention Act. In addition, the Congressionally-constituted National Citizens Advisory Committee on Vocational Rehabilitation, and the administratively-authorized Task Force on Research Utilization both have strongly urged more comprehensive programs of research utilization in order to meet pressing client needs.

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* The Research Utilization Branch (RUB) has worked primarily with research sponsored under this legislative authorization. Funds for RUB-sponsored projects also largely came from this source.

B. PURPOSE OF RESEARCH AND UTILIZATION ACTIVITIES

John D. Twiname, Administrator of SRS, has described the general mission of SRS as that of enabling "America's handicapped people to move from dependency, alienation, and deprivation toward social productivity, self generation, and independence." The research and demonstration programs are to support this mission. However, the "handicapped" encompasses a wide range of clients, as reflected in the different areas of research authorized: aging, child welfare, welfare and public assistance, and rehabilitation. Thus, most of the research is of an applied nature, given the mandate under which the R&D program operates.

With the wide range of research activities in SRS, RUB has developed the following goals: 1) to improve R&D information activities within SRS; 2) to help assure that research is planned, conducted, and reported so as to maximize the likelihood that effective results will be produced; 3) to establish links in the field between research and practice; 4) to generate new knowledge on RU, the diffusion and adoption of innovations, and the use of research results to improve policies, programs, and practices; 5) to create in service agencies a general atmosphere conducive to change, a willingness to use available resources and knowledge, and a capacity for ongoing renewal within agency and program; and 6) to work and plan toward an overall RU system that is conceptualized and tailored to fit SRS circumstances and needs, and that will bring better overall utilization of SRS research results.

C. ORIGIN

In 1966, a Task Force was convened in the Vocational Rehabilitation Administration (VRA) charged with recommending measures to identify and put effective research results to use. In July of 1967, before the recommendations came out, the creation of the Research Utilization Branch (RUB) was announced in an administrative letter from Commissioner Mary Switzer.

There were some activities in the area of dissemination and utilization even before the creation of the present RUB. The Branch grew out of a small editorial unit in the rehabilitation research program which distributed a "Rehabilitation Service Series," similar to the present Briefs. In 1964, the VRA sponsored a study on the "Utilization of Applied R&D Results" by Dr. Edward Glaser.* Results of "Selected Demonstrations" were disseminated and approximately 20 conferences designed to bring research findings to researchers and practitioners were conducted through 1968. Some of the early efforts also included cataloguing and dissemination activities. However, it was with the administrative authorization for the creation of a utilization unit that utilization activities within VRA were focused.

Various events influenced the growth of RUB. Early in 1968, the Task Force and RUB were authorized to implement the 13 recommendations of the Task Force Report. It was not until 1969, however, that specific projects were designated for sponsorship by RUB and a separate Review Body was established for the Branch. Projects sponsored in the first year of funding included the initiation of nine Research Utilization Specialists (with one in a State Vocational Rehabilitation Agency within each region) and the development of one of the two existing Research Utilization Laboratories. These projects reflected the initial focus of RUB on developing linkages to the field in order to better relay messages to practitioners.

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*This early study (reported in Glaser, et al., 1966) was used by some other federal agencies in beginning their D&U activities.

Around the same time that RUB was created, larger organizational changes were occurring that affected the scope of the Branch's activities. In 1967, various programs, including the Vocational Rehabilitation Administration and the Welfare Administration, were merged to form the Social and Rehabilitation Service (SRS). The separate research programs of the administrations also were gradually merged into the one Office of Research and Demonstrations (ORD) within SRS. During 1971, centralization of all research programs occurred, although the R&D programs still remain somewhat discrete.

With this merger, the Research Utilization Branch became part of one of the research divisions of ORD; also at this time, the need for utilization activities among all the formerly separate research programs was expressed. The National Citizens Advisory Committee on Vocational Rehabilitation in 1968 recommended that research utilization become a normal part of the SRS research program and that information systems be expanded in SRS. In 1971 an in-house Task Force was created to look at the question of utilization of SRS research; recommendations were largely directed to organizational changes. As the concern has grown for utilization of research across research programs in SRS, the RUB has informally expanded its activities to include D&U of welfare research and other areas of research beyond rehabilitation research.

A reorganization is presently pending in SRS that could have some effect on D&U efforts. The nature of the divisions in ORD may change to reflect various functional areas, e.g., employability and self support, rather than the present mix of divisions concerned with grants, contracts, or intramural research. There is also a possibility that the position of RUB in the organizational structure may change to reflect the increasing concern for SRS-wide utilization efforts.*

D. HIERARCHY IN THE SOCIAL AND REHABILITATION SERVICE

SRS is only one of the major program areas of the Department of Health, Education, and Welfare (HEW). The other agencies within HEW are responsible for other major program areas. Over all these agencies are offices of the Assistant Secretaries which provide staff services and policy advice to the Secretary of HEW as well as to the agencies within HEW.

SRS is an umbrella organization, with the policy makers in the Administrator's and Deputy Administrator's office providing guidance for the bureaus, or operating programs, and the centralized administrative offices which lie between the program and the policy functions. SRS is organized around common clients or populations rather than around a discipline or field, in other words, around the user rather than around an underlying conceptual frame of reference.

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* As of July 17, 1972, the Research Utilization Branch attained division status.

The bureaus operate under different legislative mandates and their program structures and client groups vary somewhat, in spite of overlap of some services to different client groups. The Administration on Aging is responsible for developing and expanding services to the elderly, including over 1,200 senior centers at the local level. The Community Services Administration provides technical assistance and guidelines on social services for families and children. The Assistance Payments Administration is primarily responsible for public assistance programs. The Medical Services Administration oversees the programs of both vocational rehabilitation and developmental disabilities. The remaining bureaus include the Youth Development and Delinquency Prevention Administration and the Cuban Refugee Program.

As the process of decentralization of program responsibilities from the central organization to the regions has been underway in SRS during the past few years, the role of the program people at the federal level has been changing to that of providing priority and management guidelines to the regions and states, insuring that state programs are in compliance with federal statutes and regulations, and providing new training skills and programs to match new priorities of the agency.

Along with the Administrator and Deputy Administrator and the bureaus in SRS, there are also the three offices of the Associate Administrators which are located between the other two personnel groups and provide staff assistance to both. Most of the research conducted and sponsored by SRS occurs within the Office of Research and Demonstrations (ORD) which is part of the Associate Administrator's Office for Planning, Research, and Training. Included in ORD are six divisions which have varying sources of legislative authorization for their research programs. Within the Division of Research and Demonstrations, there are four branches, three of which have different legislative sources for funds. The Research Utilization Branch does not have a separate legislative source for its funding, but receives funds from the research money which is pooled at the ORD level.

E. PRESENT OPERATIONS OF THE D&U UNIT

1. Staff

The Research Utilization Branch, at the time of interviewing, included the Branch Chief, three other professional staff members, one Research Administrative Assistant, and one secretary. Another professional staff member is in the process of being assigned to RUB on a detail basis to develop plans for SRS telecommunication efforts. The backgrounds of the staff members vary from expertise in the area of audio-visual communication to more general prior work experience in other parts of SRS.

2. Funding Base

Money for RUB's R&D efforts comes from the research budget which is pooled at the ORD level. Most funds RUB has received from this pool came from rehabilitation-based authorizations; in turn, RUB had worked primarily with the rehabilitation research in the past. The year 1969 was the first in which projects were specifically sponsored by RUB; the RU budget has increased from 1.1% of the total R&D budget in 1969 to 1.7% in 1972.

Generally speaking, ORD has moved from a "review" process to a process of "concurrence" in establishing allocations for R&D efforts. The steps taken to allocate ORD research funds to the various divisions and branches are encompassed in the management review process of SRS.

3. Functions

Branch responsibilities have expanded over time to include utilization efforts, telecommunication efforts, and efforts to establish an information system for SRS as a whole. Given these responsibilities, the activities of staff members fall into the following general areas: 1) policy formulation; 2) planning and development of in-house and contracted efforts; 3) managerial duties, e.g., monitoring of contracts. With a relatively small number of personnel, the RUB staff have assumed a "functional" approach to Branch activities and duties of the staff members vary from week to week.

The clerical staff of RUB are also involved in D&U activities. The Research Administrative Assistant spends almost all of her time distributing reports and maintaining controls over projects, since RUB is responsible for obtaining final reports of rehabilitation research after the termination of these projects. She also maintains monthly acquisition lists of final rehabilitation research reports, distributes the lists to staff in SRS, and helps monitor the abstracting contract.

Non-Branch staff members' perceptions of RUB's responsibilities and functions varied depending on how much contact and work the outside staff have had with RUB. The bureau staff who have worked most closely with RUB, Rehabilitation Service Administration (RSA) staff members, viewed RUB staff as "brokers" or "middlemen" between the R&D staff and the program staff in RSA. Some respondents in other bureaus viewed RUB's function as that of communicating what has been done and "getting information out." Others perceived no functions performed by RUB in the past that pertained to research relevant for their bureaus.

F. OTHER SRS D&U EFFORTS

The Research Utilization Branch has not been the only unit concerned with D&U, particularly since it has had a formal mandate to utilize results of rehabilitation research only, and has used funds primarily from the rehabilitation research program. The other R&D divisions and branches in ORD have been responsible for D&U activities to some extent, although most efforts have been concerned with dissemination. Beyond dissemination of final reports, some divisions and branches have conducted conferences and workshops with a utilization focus. Within the Division of Intramural Research in ORD, a Research Analysis and Utilization Branch (RAUB) was originally set up to pull together and analyze social science research in the area of welfare with the purpose of identifying needed areas of research and implications of existing research for policy makers. However, RAUB presently exists more or less "on paper" due to decrease in staff size and the pending reorganization.

Aside from the D&U efforts of the other units in ORD, some program people in the bureaus feel responsibility for utilization of research results. The training programs in the bureaus were seen by program staff as a key place to feed out research products to the practitioners, and expansion grant funds, administered by the bureaus, were also viewed as a way to link up to the research program.

The Office of Public Affairs (OPA), an SRS-wide unit, and the Public Information Offices in each of the bureaus have responsibilities for dissemination of more general information to the public. All of the staff members in RUB have specific links with OPA; for example, one RUB staff member has liaison with the editor of SRS Newsletter to insure R&D input into this medium. RUB also views the dissemination function as a responsibility of the contractors and grantees themselves.

G. THE KNOWLEDGE BASE

Most of the research knowledge produced in SRS is sponsored by ORD. The reorganization of 1967 ultimately moved research responsibility from the line administrations to the centralized location in ORD, which now has divisions and branches which are linked to the program administration areas. Therefore, R&D information should be responsive to the needs of the line administrations. In 1970, rehabilitation R&D received the largest share of R&D projects and funds and was conducted for four purposes: to add information useful to the fields of physical, mental, and social rehabilitation; to make existing programs more effective; to serve administrators of these programs; and to stimulate and guide legislation.

The primary role of RUB is that of improving the dissemination and utilization of the rehabilitation R&D. Increasingly, RUB has been handling all of the R&D sponsored by SRS in a number of efforts: an annotated bibliography SRS Research (1971); an abstracting and indexing contract (RUB sends all R&D to be included in NTIS); and RU requirements for applications and continuation requests, used for all R&D programs in SRS. RUB has served as a point of coordination for D&U contracts and grants as well as conducting some in-house activities.

In FY 1970, 27 D&U projects were sponsored by RUB (using rehabilitation research funds allocated at the ORD level), including two grants for Research Utilization Laboratories and nine pilot Research Utilization Specialists. Contracts are also let for abstracting and indexing final reports and development of the SRS-wide information system, for state-of-the-art reviews, utilization conferences, and specialized packaging. RUB also prepares the _R&D Brief Series_, highlighting results and implications of research.

In conclusion, we should note the relation of RUB to research projects sponsored elsewhere in ORD. Most of RUB's effort came once the project was completed and "turned over" to the Branch for development and execution of such D&U activities as judged warranted. RUB has long been actively involved in the development and revision of guidelines for final report writing. Recently, however, the influence of RUB has been expanded to the earlier stages of research development by means of staff involvement in planning the annual R&D Strategy and by required use of RUB-produced RU guidelines for research applications and continuation requests.

H. AUDIENCES

1. _Intended Clients_*

The intended clients or users for the information which RUB either disseminates or causes to be disseminated (through its contracts and grants) range through several different systems. Various professional or practitioner groups, primarily in rehabilitation, were mentioned frequently by RUB staff as their most important clients. Other federal staff members (chiefly within SRS) are also important intended clients, in so far as they administer programs which affect practitioners and the ultimate clients (those in need of SRS program services) directly. Here, too, policy makers at all levels become potential targets for research knowledge. Universities and training centers are additional important target groups.

Given the past rehabilitation emphasis of RUB, RSA has been the SRS administration with which RUB has linked most closely. Occasionally, information provided to RSA staff is passed on directly to the bureaus' important clients; research knowledge may reach the "ultimate" clients indirectly in the form of program emphases.

2. _Actual Clients_

In our interviewing process it was difficult to separate intended from actual clients, particularly since a complete accounting of all communication activities of each staff member was not solicited. However, from the interviews it was possible to obtain general indications of which client or user groups received emphasis in RUB activities and which media were employed.

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* "Clients," as used in this report, means "information users", i.e., clients of D&U activities.

In general, the actual clients of RUB are primarily practitioners, SRS staff, and more recently, policy makers. Regarding practitioners, an important principle appears to guide RUB's activities: given the size and work load of RUB, most dissemination efforts to reach this group appropriately should not be and are not undertaken directly by the Branch itself. Instead, project activity (e.g., D&U contracts and the original researchers themselves) should undertake the actual communication task in reaching practitioners. RUB is thus freed to spend more time preparing materials for dissemination, to communicate with SRS staff and policy makers, and perhaps most importantly, to plan future D&U activities by bringing together theories and models of D&U with knowledge of the topics, needs, knowledge, and clients of SRS.

a. Policy Makers

There has been a recent attempt to get more information to policy makers in general. Written materials, e.g., R&D strategies, summary and position papers, etc., have served as a primary medium of reaching policy making staff in SRS and HEW. The D&U effort for policy makers has shifted informally to RUB and other ORD staff with the cut in the Research Analysis and Utilization Branch (Division of Intramural Research). The management procedure in which bureau, regional, and ORD staff are involved in developing the R&D Strategy may serve as a means of relaying R&D information to policy makers at various levels.

b. Practitioners

Many different mechanisms are employed to reach this group (here defined as state and local, public and private, topic experts -- e.g., rehabilitation counselors and administrators of state and local programs). It is for this group that RUB attempts to develop linkage mechanisms outside of itself. Current efforts of RUB show a shift of concern away from dissemination activities and toward the utilization part of the D&U process. Three related processes fit in this current interpersonal emphasis to reach practitioners: the two RU Labs, nine RU Specialists in pilot states, and interface conferences which bring together researchers and practitioners. We do not intend to give the impression that RUB only links to practitioners through interpersonal, outside activities. A large proportion of RUB's staff time goes into the preparation of written information (either done in-house or through contracts or grants outside, e.g., indexing, abstracting, and summarizing contracts). As a general conclusion, RUB appears to be exploring, within its staff and budget constraints, the effectiveness of several different models for communicating research knowledge to practitioners, and for getting such communicated knowledge put into use in the daily operations of users. This indicates an awareness of both theories and models of D&U, and of needs and conditions of researchers and potential users.

c. SRS Staff

Most of RUB's contacts in SRS have been either within ORD or with RSA. Upward direct communication to policy makers as clients appears to flow more through ORD than RSA channels, following the chain of command to the organization of which RUB is a part. Written materials are the primary medium, but interpersonal links do exist to both ORD and RSA and, because of more limited activity, other administrations to a lesser degree. Other ORD project officers have also developed informal communications with bureau staff in SRS, given that they are the ones who are most directly involved with projects and who have good knowledge of expected project results.

d. Researchers

In their role as project officers for RUB-sponsored research, Branch staff have frequent contact with a small portion of the research community. Communication appears about as frequent with researchers in search of topics as with those who are already funded. Beyond this admittedly small number of researchers, RUB has an impact on rehabilitation researchers through the D&U guidelines it has developed and revised for final reports. The guidelines which RUB has recently developed for RU input in all SRS research applications and continuation requests will impact an even larger number of researchers.

e. Consumers and the General Public

In collaboration with OPA, RUB has done much in this area. A half-hour television program has been written for a nationwide network, and a RUB staff member has assisted in developing videotapes on various subjects. Project Alert, in which assigned staff will relay R&D information to the media, is being built up gradually. The written R&D Brief Series and more recently, the audio-visual series are considered to be directed to this audience as well as to others. Some requests for information from the public do come to RUB and are answered by staff members with existing written materials or referrals to other SRS offices, the grantees, or NTIS.

III. MENTAL HEALTH SERVICES DEVELOPMENT BRANCH/NATIONAL INSTITUTE OF MENTAL HEALTH

A. LEGISLATIVE AUTHORIZATION

Through Public Law 911, authorization was given in 1956 for the Mental Health Project Grants Program of the National Institute of Mental Health (NIMH)*. This program was established to provide funds for demonstrations of improved ways to deliver mental health services. Funding levels for the whole Grants Program have remained relatively stable over the last three years at about \$14½ million; the core of the program in the Mental Health Services Development Branch has funds of about \$7½ million out of that total.

B. PURPOSE OF RESEARCH AND UTILIZATION ACTIVITIES

Dr. Bertram S. Brown, Director of NIMH, has described the Institute's mission as follows: "to develop knowledge, manpower and services to treat and rehabilitate the mentally ill, to prevent mental illness, and to promote and sustain mental health." Thus, a "trinity" of research, training, and services has been important in the development of the agency's mission.

The research and development mission fostered by the Mental Health Services Development Branch includes a three-stage process: 1) evaluating the needs, gaps, and problems in the delivery of mental health services; 2) searching for appropriate existing solutions or developing solutions through research; 3) fostering the diffusion and adoption of solutions. The emphasis of the R&D mission is to promote their Division's goal of the improvement of the delivery of mental health services.

C. ORIGIN

Before 1966, the Mental Health Project Grants Program was attached to what is now known as the Division of Mental Health Service Programs. In 1966, this Grants Program was moved out of that component as the Division did not carry a research mission; instead, this Division focused on administering grant programs which were designed to initiate and fund staffing and construction for local community mental health centers and to provide project support for mental hospitals.

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* Other legislative authorization for research exists in NIMH; however, the Mental Health Services Development Branch primarily works with research of the Mental Health Project Grants Program (especially with the services R&D portion of this Grants Program). This Grants Program comprises about 19% of the total NIMH research allocation.

The 1966 transfer of the Mental Health Project Grants Program into what is now known as the Division of Extramural Research resulted in the Grants Program becoming the Applied Research Branch. It remained in the Applied Research Branch until 1970, at which time a portion of the Branch staff and over 50% of the funds from the Grants Program (for the more service-oriented research) were moved into the Mental Health Services Development Branch. In 1970 then, the present Mental Health Services Development Branch was created by the merger of staff from the Applied Research Branch and staff already in the MHS Program Division. This merger was important in that it brought together staff with different expertise and backgrounds and allowed for a "marriage" between a research program and a service-support program for the whole MHS Program Division.

The staff who moved from the Applied Research Branch brought with them knowledge of R&D program development. In 1966, an attempt was made to review the findings of the first ten years of the Mental Health Project Grants Program; however, results could be obtained for only 40% of the terminated projects. This discovery led to project monitoring by staff to insure the completion of projects. Also, the dissemination of project information became an important goal in the Grants Program. All projects for which final reports were received in 1967 were evaluated in terms of the amount of dissemination that had occurred.

In NIMH-sponsored studies, it was found that "innovators" rarely obtain their ideas from written materials; therefore, the concept of utilization was introduced. Through contracts and in-house research, studies were conducted on the factors that influence the utilization of projects. Some of the results were employed in experimental efforts and criteria were developed by which to rate the utilizability of specific research applications. Beyond utilization, another concept recently has been introduced: In an attempt to improve the delivery of services, project grants are to be used as instruments in promoting organizational change.

These then were the concepts that persons involved in the Grants Program brought with them into the Mental Health Services Development Branch. On the other hand, those staff members who had been in the Division of MHS Programs possessed background in consultation through their experiences in administering support programs for the community mental health centers and mental hospitals.

Even though the Branch has developed experience in fostering the diffusion and adoption of research results, it has not served as a D&U unit for all of NIMH research since neither this unit nor other units in NIMH have administrative or legislative authorization to provide such a function. Instead, the Mental Health Services Development Branch has defined responsibilities for research and development activities (including D&U) for services-related research.

D. HIERARCHY IN THE NATIONAL INSTITUTE OF MENTAL HEALTH

The National Institute of Mental Health (NIMH) is one of four organizations within the Health Services and Mental Health Administration (HSMHA). HSMHA is the "health arm" of the Department of Health, Education, and Welfare.

NIMH has been described as a "flat" or "horizontal" organization, since there are basically only two types of units within the Institute.

Located under the Director and Deputy Director are the offices which do not have grant money to dispense, but serve the primary function of administration, coordination, and evaluation of the major program efforts. For example, the Office of Program Planning and Evaluation (OPPE) serves the function of analyzing results of major programmatic efforts in order to plan and initiate programs. The other offices include the Office of Administrative Management, the Office of Program Coordination, and the Office of Communications.

The divisions, which are located under the offices, possess the funds for grant programs of research, training, and service. There are three divisions in the Mental Health Intramural Research Program which are involved exclusively in intramural research in clinical and laboratory settings. There are six divisions which sponsor extramural grant programs. The Division of Extramural Research has a primary function of supporting research which ranges from very basic clinical research to applied research. The Division of Manpower and Training Programs has responsibility for administering programs of support for the training of mental health personnel. The Division of Special Mental Health Programs has centers which are organized around special mental health problems, e.g., suicide, and which administer programs that include various combinations of research, training, and services. The Division of Narcotic Addiction and Drug Abuse administers research, training, and service grant programs around the problem area of narcotics and drug abuse. The National Institute of Alcohol Abuse and Alcoholism administers a combination of programs somewhat similar to the Division of Narcotics and Drug Abuse, focusing instead on the problem of alcoholism. The Division of Mental Health Service Programs administers and coordinates various programs focused on the development and support of nationwide mental health services. Included in these programs are the grant programs for the construction and staffing of local community mental health centers, funds to public mental hospitals, as well as the provision of consultation for various groups. Joined to these functions is the research and development program of the Mental Health Services Development Branch, one of the four branches within the MHS Program Division.

Decentralization has been occurring within the NIMH-administered service programs and the ten regional offices have had increasing responsibilities for administering and monitoring the various service grant programs. This decentralization has allowed the central staff more time to become involved in the development of guidelines and consultation to the regional office staff and to state and local clients.

E. PRESENT OPERATIONS OF THE R&D UNIT*

1. Staff

At the time of interviewing, the Mental Health Services Development Branch (MHSV) staff included about 18 professionals, expert in various substantive areas such as psychiatry, psychology, and social work. Most of these staff members are employed at the grade level of GS-15; in fact, it was noted that the Branch contains one of the largest pools of this grade level of staff within any NIMH branch.

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* The Mental Health Services Development Branch has described itself as an "R&D" unit, rather than a D&U unit. Their concept of R&D, however, includes diffusion and adoption.

2. Funding Base

The research budget for the Branch and other research units in NIMH generally is determined by the funding levels of the previous year. The MHSV has had an annual research budget of approximately $7½ million for grants for the last three years. An additional supplement of $3 million has been requested for the development of the children's service area, which would put their annual research budget at about $10 million. The Branch has additional contract funds of $40,000 which are used for funding publications, conferences, and professional consulting services. The total annual research budget for NIMH is approximately $120 million which accounts for over 1,500 research projects; these figures do not include some 300 intramural research projects.

3. Functions

The major function of the MHSV has been described as that of research and development, which encompasses the entire process ranging from the development and stimulation of research projects to diffusion and adoption activities. Staff activities fit into three major areas: 1) consulting in the field, e.g., responding to requests for giving talks, serving as technical consultants for potential grant applicants, consulting with staff of mental health centers and other clients; 2) responding to in-house requests for writing reports, participating in task forces and other committees, etc.; 3) monitoring of ongoing projects. The percentages of time spent on each of these activities varies among Branch staff; however, it was clear that considerable amounts of time were spent responding to in-house requests (percentages ranged from 15% to over 60%).

The involvement of Branch staff in division level and NIMH level responsibilities in addition to Branch responsibilities is a result of the Branch structure. MHSV is organized around functional program areas, e.g., children's mental health. One professional staff person is responsible for each of the program areas, including the coordination of efforts around that area. Thus, staff members provide professional expertise in their specific program area; additionally, they may be called upon to assist in division and other NIMH activities.

NIMH staff members outside of the MHSV were asked to describe their relationship to the Branch and their perceptions of the Branch's functions. Staff in the same division viewed the MHSV as providing important contributions in the area of D&U as well as providing contributions to research on services. However, most of the staff outside of the division did not recognize the MHSV or any other unit as having sole responsibility for dissemination and utilization activities and did not report any systematic relationship with the Branch.

F. OTHER NIMH D&U EFFORTS

Although other NIMH divisions and offices have initiated some efforts in the area of D&U, it appears that most of these efforts are in the area of dissemination (e.g., packaging information, providing storage and retrieval facilities for available knowledge). For example, the Division of Narcotic Addiction and Drug Abuse has defined as part of its responsibility stimulating the "communication of appropriate information and educational material through the development of conferences, committees, publications, and use of public media." The National Institute of Alcohol Abuse and Alcoholism has defined a similar responsibility of communication for itself.

The centers in the Division of Special Mental Health Programs also have been involved in some D&U activities. For example, the Center for Studies of Crime and Delinquency has used contract money and some administrative supplements to encourage the production of state-of-the-art papers, manuals, and conferences.

These D&U efforts are decentralized and are focused primarily on the research specific to the problem areas of concern in the various divisions. However, there are some dissemination efforts that cross division lines, and such efforts are located in some of the offices. Within the Office of Program Planning and Evaluation, the Program Analysis and Evaluation Branch has responsibilities for assimilating information that has been produced through various NIMH efforts. The Office of Communications has been charged with the responsibility of providing general information to the public as well as more specialized types of information. The National Clearinghouse for Mental Health Information within this Office has the responsibility of "maintaining cognizance over all mental health information" and has as its mandate the "prompt and effective dissemination of this information to all individuals and organizations in mental health."

G. THE KNOWLEDGE BASE

MHSV has a dual nature in that one part of the Branch is involved primarily with improving service delivery and includes topic area experts in such fields as community, rural, and child mental health, whereas a smaller portion of the Branch is more active in research on the D&U process.

Staff members involved in improving service delivery are each expert in some one specialty and must monitor new developments in that field, relying on individual initiative and personal information resources. Useful knowledge for these staff members comes from the wider professional literature as well as from MHSV-sponsored projects. Grants are administered by MHSV for developing, pilot testing, and promoting the utilization of new service delivery mechanisms (e.g., demonstrations on cooperative nutrition and health programs, child advocacy, monitoring of service delivery system performance, training institutes, etc.). Staff serve as project officers and as general linkers to NIMH and outside for the information these projects produce.

Thus, these staff members form a bridge between NIMH, their "clients" in the delivery system, and knowledge produced both within their field and within NIMH. This role is a complex one which centers a great deal of the responsibility for information flow directly on the staff member, who thus strives to maintain his grasp on the scientific and practical knowledge base while at the same time serving as project officer, proposal instigator and reviewer, knowledge transformer and summary writer, user progress and need monitor, and finally, a "warm terminal" between clients and knowledge. We found that some staff members were using information-organizing services (e.g., the National Clearinghouse for Mental Health Information), but that others were not; there does not appear to be any overall MHSV activity designed to serve as a knowledge surveillance mechanism for these staff members.

A few members of the Branch are more directly involved with research on the D&U process itself across topic area boundaries. Research on the D&U process can be divided into the following categories: 1) studies of past and present diffusion and adoption of NIMH-sponsored projects, such as projects which use previous NIMH projects as data, looking at literature citations to the projects and the proportion of past grantees who can cite users for their findings; 2) research on the research process, e.g., a project which examined project structure and process correlates of ultimate report quality; and 3) work on identification of information needs among user groups. Another large area of interest in MHSV is in developing new evaluation methodologies to measure performance of mental health service programs.

H. AUDIENCES

1. Intended Clients

Given that the MHSV Branch mission is to improve the delivery of mental health services, both directly and through improvement in the knowledge creation-processing-delivery process, the most important "ultimate" client for MHSV's work should be those individuals and institutions who are in the business of providing mental health services. This group would include mental hospitals and mental health centers, and state mental health offices and staff. In reaching this group, a second client area becomes important: those persons and units within NIMH who are producing knowledge through the research process and who control research through policy making.

2. Actual Clients

a. Policy Makers

Much of the Branch's linkage with Federal policy makers comes through the use of staff in task force or position paper generation roles. In the specific field of knowledge D&U, informal contacts with other units similar to MHSV (i.e., with applied constituencies), and manuals such as those on project evaluation are used to carry innovations; however, the basic-applied division within NIMH would appear to make it relatively difficult for such a procedure to diffuse from applied areas into basic research programs. A Policy Analysis Group has been set up in MHSV and the Division to discuss how to carry out implications of evaluation contracts for policy and practice.

b. Practitioners

Here we find a large part of the work of MHSV. Practitioners in service delivery were mentioned as primary clients and in terms of how clients are reached, most staff members specified media designed to impact this group.

c. NIMH Staff

Most of MHSV's contacts in NIMH take place when Branch staff are called upon to perform both Division and NIMH level responsibilities. Branch staff members spend from 15% to 60% of their time performing these functions.

d. Researchers

Researchers, together with practitioners, make up the majority of MHSV's clients. MHSV can and does have an impact on researchers working in the applied areas of service delivery. For example, the project evaluation guidelines which resulted from an MHSV contract are now being applied to proposals, a quick way to change research practices. However, there is little impact on NIMH basic research. The Branch does have funds available for research on D&U which, together with staff efforts to conceptualize and review the field, allow an information flow between the area of D&U research and the Branch.

e. Consumers and the General Public

Very little of the work of MHSV reaches the mental health service consumer public directly. The work of the unit will impact consumers to the extent that it can change practices among the primary client population for the Branch, the professionals involved in service delivery.

IV. NATIONAL CENTER FOR EDUCATIONAL COMMUNICATION/OFFICE OF EDUCATION*

A. LEGISLATIVE MANDATE

Legislative authorization for research in the Office of Education was first given in the Cooperative Research Act of 1956 and was followed by authorization for research and dissemination through Title VII of the National Defense Education Act of 1958. With the expiration of Title VII, the provision for media research and dissemination was absorbed in the Cooperative Research Program. In 1965, Title IV of the Elementary and Secondary Education Act (ESEA) explicitly called for dissemination. After the Cooperative Research Act was repealed, money authorization was given under Section 402 of the General Provisions Act. There has been a ceiling set of $54 million for FY 1973 and $68 million for FY 1974 for the functions that were previously performed under the Cooperative Research Program, such as statistical programs, planning and evaluation studies, and some dissemination activities. Other authorizations for dissemination within OE exist.

B. PURPOSE OF RESEARCH AND UTILIZATION ACTIVITIES

Near the close of FY 1970, the National Center for Educational Communication (NCEC) was established to further strengthen the Office of Education's efforts to accelerate rational decision making and program improvement through the use of current knowledge, validated R&D based instructional materials and systems, and tested exemplary practices. NCEC has established the following five operating objectives: 1) to foster the spread and installation of validated programs, practices, and products; 2) to strengthen the capabilities of state and local education agencies for disseminating and applying information for educational improvement; 3) to increase access to the educational knowledge base through the Educational Resource Information Center (ERIC); 4) to provide interpreted, research-based information about significant educational problems for educational decision makers and practitioners; 5) to conduct and support R&D on information dissemination and utilization.

C. ORIGIN

Under Title VII of the National Defense Education Act of 1958, an Educational Media Branch was established in OE to support research on media as well as to perform dissemination activities. In 1961, funds were made available from Title VII to experiment in developing an ERIC-type system, and in 1964, an ERIC branch was created.

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* Recently enacted legislation has transferred the D&U unit under study, the National Center for Educational Communication, to the newly created National Institute of Education (NIE).

In 1965, with the passage of the Elementary and Secondary Education Act, the Division of Research, Training, and Dissemination was created within the Bureau of Research to administer an ERIC system. The seeds of the present NCEC program were begun in this time period: ERIC was developing on a decentralized basis, with Clearinghouses being set up around the country to select and acquire literature on particular areas of education; centralized operations were performed by private firms including computer operations, marketing of microfiche, and providing computer searching services.

In 1968, the name of the division was changed to the Division of Information Technology and Dissemination (ITD). Although the focus of the division remained on the development and maintenance of the ERIC system, there was growing concern over the direction and focus of dissemination activities. A resynthesis of the literature in the area of D&U itself was seen as an additional need, and Dr. Havelock was funded to develop both an extensive bibliography and alternative models of D&U.

In 1969, the major objectives of the unit were still focused on ERIC: to develop an OE-wide dissemination and application system and to provide fast access to current information for use by OE staff.* However, a significant change occurred to broaden and expand the activities and concerns of the unit. ITD became the Office of Information Dissemination (OID) and was separated from the research arm of OE. Then, in 1970, the unit director cut ERIC's budget in order to use the remaining funds for more active dissemination efforts. This transference of funds reflected the shift of unit priorities, with the highest priorities becoming those of accelerating the spread and installation of validated practices and research-based products, and strengthening the capabilities of educational organizations to communicate and apply validated practices.

Also in 1970, the OID became the National Center for Educational Communication (NCEC) and was set up to have two divisions: the Division of Practice Improvement and the Division of Information Resources, as well as a Copyright Administration staff. The Division of Practice Improvement funded projects designed to spread validated programs; the Division of Information Resources included ERIC, the Educational Reference Center (ERC), and the Educational Materials Center.

Transfer of tested practices, communication of information about tested knowledge and materials, and their nationwide adoption have become major priorities for OE, as evidenced by the establishment of NCEC at a key position for developing and directing major OE-wide communication programs. In June, 1972, NCEC contained two divisions, each with two branches. The Extension Support Branch and the Dissemination Programs Branch were in the Division of Educational Extension Systems; ERIC and ERC were in the Division of Communication Support. These two divisions reflected the overall objectives of NCEC, those being the development of an educational extension system and communication support.

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* The predecessor of the present Educational Reference Center in NCEC developed out of the latter objective.

The refinement of NCEC indicated the growth of the D&U unit from the initiation of ERIC and the more "passive" efforts of building access to the knowledge base to the development of specific branches concerned with validation and more "active" dissemination and installation efforts, as well as the longer-term development of linkages and person-to-person networks throughout the nation.

D. HIERARCHY IN THE OFFICE OF EDUCATION

The Office of Education is in the Department of Health, Education, and Welfare. Located directly under the Commissioner of Education are five Deputy Commissioners, an Executive Deputy Commissioner, Executive Assistants, and an Office of Special Concerns.

The Offices of Priority Management, Regional Office Coordination, Program Planning and Evaluation, and Administration are located under the Deputy Commissioner for Management. The Deputy Commissioner for External Relations oversees the Office of Legislation, the Office of Federal State Relations, the Federal Interagency Committee on Education, and the Office of Public Affairs. The Bureaus of Education for the Handicapped, Elementary and Secondary Education, and Adult Vocational and Technical Education are situated under the Deputy Commissioner for School Systems. Located under the Deputy Commissioner for Higher Education are the Bureau of Libraries and Educational Technology, the Bureau of Higher Education, and the Institute of International Studies. Finally, NCEC was for a short time one of three National Centers located under the Deputy Commissioner for Development, the other National Centers being the National Center for Educational Statistics (NCES) and the National Center for Educational Research and Development (NCERD). In addition to these three National Centers, the Bureau for Educational Personnel Development and the Experimental Schools program are also located under this Deputy Commissioner. Most functions of two of the Centers, NCEC and NCERD, and the Experimental Schools program have subsequently been absorbed by the new National Institute for Education; NCES and the Bureau for Educational Personnel Development remain within OE.

The bureaus and offices under the Deputy Commissioners are further divided into divisions. Each of these five major units supports programs and funds research concerned with the priority areas within their particular focus in the field of education. The regional offices serve as an operating extension of OE for service to and close working relationships with states and other recepients of federal educational aid. Increasing decentralization is a goal of OE and is reflected by various programs within the agency.

E. PRESENT OPERATIONS OF THE D&U UNIT

1. Staff

At the time of interviewing, the staff of NCEC included twenty-eight professionals and twelve clerical persons. The number of staff is controlled both by the Salary and Expense budget and the number of slots available, with the latter factor being the primary determinant. Staff members include people with backgrounds in local information centers, teaching, computer and information science work, and school administration.

2. Funding Base

The NCEC budget has been allocated as the dissemination line of the R&D budget of OE. Before FY 1970, ERIC had about $5 million annually. Since then, funds have been appropriated for both ERIC and other objectives, e.g., installation efforts. The total funding base for FY 1973, as passed in the Appropriations Bill, is $14.750 million, with about $9 million allocated for the extension program and the remaining funds for the communication support program.

3. Functions

NCEC staff activities vary according to the particular unit within which staff members work. In the Division of Educational Extension Systems, staff members of the Extension Support Branch sponsor much of the R&D work in the area of D&U and also the evaluations done of NCEC itself. In the Division of Communication Support, there is an ERIC staff which primarily monitors the Clearinghouses and supporting contracts, and an Educational Reference Center (ERC) staff which provides direct information services and performs such tasks as computer searches requested by OE and HEW staff.

F. OTHER D&U EFFORTS

Although specific D&U activities still occur in some other parts of OE, NCEC increasingly has been viewed as the center for such activities whereby various programs and efforts can be linked to educators in the field. However, various other OE programs continue to support their own dissemination efforts and, in some cases, specific legislative authorization requires that programs include built-in dissemination (e.g., projects supported by Title III and Title I of ESEA).

Various library units and reference units have been set up in OE, and the Regional Laboratories and university-based R&D Centers have developed dissemination mechanisms of their own which are available to NCEC staff. In the Bureau of Adult Vocational and Technical Education, "satellite" centers have been set up in some states for dissemination purposes and some of the Research Coordinating Units also conduct dissemination activities. The Bureau of Elementary and Secondary Education (BESE) attempts to bring the potential adopter-adapter of an innovation and the producer of the innovation together; one method they are using to implement this model is an Education Innovation Fair. Within BESE, the Division of Planned Supplementary Centers administers the Title III funds; this program funds resource centers organized within each state and is the one program that has dissemination built into it by law.

All OE publications intended for general distribution are cleared for style and policy through the Office of Public Affairs (OPA). OPA handles the public relations activities of OE ranging from press releases and coverage to National Education Television programs and radio tapes. Although most of OPA's activities are intended for the general public, articles also are placed in specific educational journals to reach a more defined audience.

G. THE KNOWLEDGE BASE

Approximately one-third of the current effort among Clearinghouses and contractors is geared to the production of reviews, syntheses, etc., drawing upon the total knowledge base in education. These products are also processed by NCEC: they are disseminated both within the ERIC system and directly to policy makers, practitioners, and to some extent, the research community. Many of the repackaged products have originated in projects of the Dissemination Programs Branch of NCEC. This Branch sponsors PREP reports which provide interpretive information for practitioners and policy makers in addition to syntheses and reviews. The Exemplary Programs and Practices service has also been developed in an attempt to identify, validate, facilitate, and promote the adoption of the most effective new programs or products. Efforts to try to break the knowledge base loose from simply technical reports to look at other kinds of knowledge, programs, practices, and products were felt to be a part of the NCEC knowledge base by staff members. Such efforts include the collection of promising practices, on-line batch searching, and R&D installation efforts (e.g., Toy Lending Library). These materials then become the object of NCEC D&U activities.

NCEC has also sponsored a number of studies to understand and guide their own D&U activities. These studies range from contracts for large literature reviews and conceptualizations in the field of D&U theory to specific evaluations of the impact of a particular delivery format. Some examples suggest the broad range of these efforts:

> The exhaustive literature review and theory development contained in the report, PLANNING FOR INNOVATION (Havelock, R.G., Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, Ann Arbor, Mich.).

A study of innovative behavior among school superintendents.

A study of the file structure of ERIC, with an eye toward partitioning the data base to better fit the cognitive and terminological sets of practitioners.

Studies of the functions and roles of the overall ERIC system.

Several evaluation studies, e.g.: Clearinghouse products, Educational Product Displays, etc.

Studies of the information needs of a variety of typical educational users.

H. AUDIENCES

1. Intended Clients

Interviews with NCEC staff provided the following breakdown of the intended clients for the work the Center does:

1. Educational decision makers at the state and local level, extending down to the individual teacher.
2. "Consumers" or clients of education, including school boards, community groups, parents, etc.
3. Federal decision makers; subdivided into OE staff and Congress.
4. The R&D community, including researchers both in D&U and in basic educational research, development projects, and evaluation work.

2. Actual Clients

a. Policy Makers

In general, most of the contacts that NCEC has with non-OE policy makers at the Federal level come through information requests that are typically sent to the Educational Reference Center (ERC) and answered out of ERIC data base searches. Personal contacts with Congress are limited by policy (as in most Federal agencies), except as instigated by the legislative branch.

Within OE a mixture of formal (ERC) and informal means are used to reach policy makers. Informal contacts and a policy of distributing new products to OE policy makers both serve to keep these staff members aware of NCEC activities and help to build a general concern for D&U.

b. Practitioners

Practitioners are the greatest audience of NCEC's work; the most important groups are the local level decision makers, e.g., superintendents, school boards, state level education staff. NCEC's direct contacts with practitioners come primarily via the various print materials it prepares and processes such as model program awareness documents, products of the Targetted Communication program, and PREP materials, and indirectly through the Clearinghouses, the ERIC data base, and the demonstration project program. Informal contacts exist on a more limited basis because of the small size of NCEC as compared to the potential practitioner population; however, staff try to contact state education heads whenever possible. Regular meetings held with dissemination representatives from the 50 states and convention booths and displays (handled by the Clearinghouses) are also used.

A new thrust will be the extension agent, a role being created to fill the interpersonal linkage semi-vacuum at the state level. Coupled with the growth of local or state level information centers, the extension agent will be able to interface between retrievable R&D information and the specific needs of individual practitioners. Information centers will also be publicized for direct use by practitioners.

c. OE Staff

Linkages to OE staff, e.g., programs or bureaus, roughly parallel those to OE policy makers, but the process of shared proposal review and critique also forms a bridge. There is also informal collaboration in identifying products to receive dissemination efforts.

d. Researchers

Most of the formal information flow between NCEC and researchers is through the RFP proposal interchange. In addition, ERIC has become known as a centralized repository for educational research information, and as such, is being utilized by researchers for literature reviews. The ERIC centers also link to 283 professional associations to publicize the ERIC data base and services.

e. Consumers and the General Public

There has been little direct contact with this audience, again chiefly because of the size of this population and the existence of other pressing priorities for NCEC. Undoubtedly, however, the new information centers and extension agents will have a somewhat higher profile for this consumer group.

CHAPTER III

THE MODEL OF PROBLEM-SOLVING LINKAGE: AN OVERVIEW AND RATIONALE FOR THE ANALYTICAL FRAMEWORK USED TO COMPARE D&U AGENCY FUNCTIONS

I. BACKGROUND AND RATIONALE

A. CONTEXT: WHY IS RESEARCH UTILIZATION AN ISSUE?

In the largest view a federal agency in a human service area is a national problem solver for the people as a whole, with a special focus on the problems and needs of people within its service domain. Congressional legislation usually confines the mission at any one point in time to certain types of services for certain types of users, but since the legislator's knowledge of what represents effective "service" is still very cloudy in most areas, the legislative mandate has increasingly included "research" or "R&D"* as an important category of activity.

The original rationale for federal support of research on human services was probably somewhat obscure. It appeared that earlier investments in medical research had led to improved health practices and that some really very basic research in physics had led to the atomic bomb. Hence, Congress had become accustomed to providing regular support for hard science almost carte blanche with the scientists themselves making the key decisions on objectives and criteria of worth. The apparently visible fact that research had been used successfully over and over again to improve practice in medicine, agriculture, and industry was enough evidence to the legislators that research investments paid off; however, the actual patterns and paths toward application and utilization were rarely analyzed and only obscurely understood. When the federal government began in the 1950's and early 1960's to support "soft" science in significant amounts, a similar carte blanche philosophy prevailed. Grants were provided to researchers in universities to pursue their own interests within a broad domain of "relevance." But the "soft" sciences generally never had the trust and respect afforded the "hard" sciences so that the question of utility was raised early and loudly in many quarters before a broad knowledge base could be developed and before academic social scientists could mobilize an effective network (and lobby) of their own.

This discontent with social research is expressed in many guises. Sometimes it is a call for different types of research, e.g., more "relevant" research or more applied research. Sometimes it is a call for "higher quality" of research and of researchers in a given area or more effective planning and coordination of research efforts (which the universities typically can't cope with). The problem is also sometimes cast in communication terms, e.g., the need for more forceful or extensive diffusion of research findings to policy makers, the public, practitioners, or whoever, and more effective translation of research so that non-researchers (at various levels of power) can make sense of it. These are some of the many voices of concern that are forcing us to look at the problem of research utilization more seriously.

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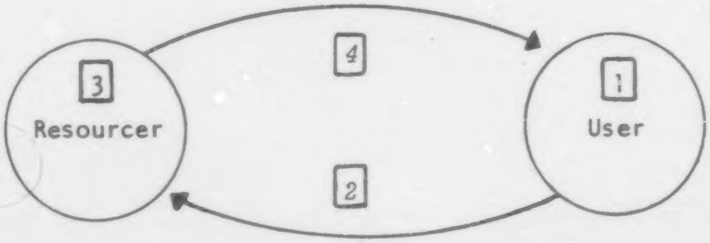
*R&D = Research and Development; D&U = Dissemination and Utilization.

B. THE PROBLEM-SOLVING DIALOGUE

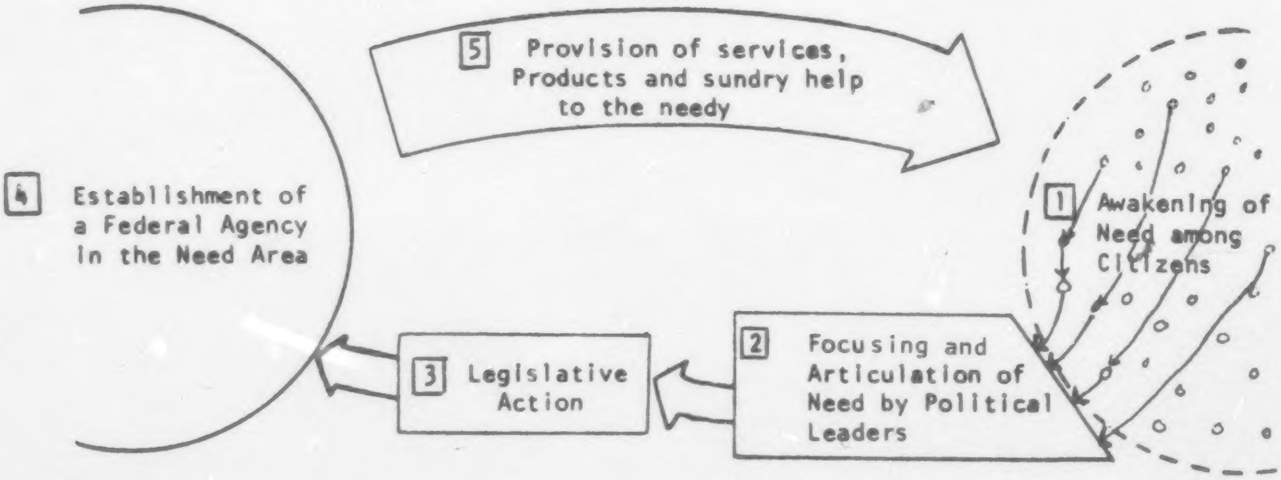
It is more than likely that most of these separate views about what is wrong with R&D are correct, but to hear them all together makes for confusing listening. This is why we feel it is essential to construct a model which is simple, broadly applicable and logical. We propose that the two component problem-solving dialogue serves reasonably well as such a model. The figure below depicts this model in its most rudimentary form.

FIGURE 3.1 The Problem-Solving Dialogue



The "user " (1), is some person or group (of any size or complexity) which requires something from outside itself. In order to acquire this needed item it reaches out into the environment (2), to find some person or group or location where the item might exist (3). If the item does in fact exist or if it can be created, then it has to be transmitted or transported back to the user (4). This model generally describes the relationship between federal service-providing agencies and their clients, the people. As our society has developed, its citizens have been able to differentiate and articulate more and more need areas where they want to receive "help." For some of these need areas the private sector has been an adequate provider but for some it has not, so that increasingly government agencies have become helpers across the widest span of human needs. To meet the demand, most often expressed through political and legislation action, the government has set up specialized agencies and bureaus which act as "resourcers" for the particular need area designated. Hence, a kind of gigantic 2-way problem-solving dialogue begins to take place between these new agencies and the segments of the society which feel the need most acutely. Figure 3.2 suggests how this dialogue begins to take shape. However, anyone who has observed the evolution of our society will be acutely aware that it is hardly ever that simple. Chief among the complexities is the fact that the federal agency does not usually know what to do or how to do it. The citizens say "cure cancer, eliminate poverty, teach everybody to read, rehabilitate all the handicapped, give everyone a job." No government

FIGURE 3.2 How a Societal Problem-Solving Dialogue Might Get Started


5 Provision of services, Products and sundry help to the needy
4 Establishment of a Federal Agency in the Need Area
1 Awakening of Need among Citizens
2 Focusing and Articulation of Need by Political Leaders
3 Legislative Action

agency in itself has the knowledge to do any of these things, and as a result they have sometimes turned to knowledge building specialists (i.e., the R&D community) to provide them with some of the answers. As a result, a second type of 2-way problem-solving dialogue comes into being in which the federal agency is the needy client and the R&D community is the resourcer.

In addition and at a much broader and looser level the R&D community carries on a direct dialogue with the society as a whole, i.e., to some degree researchers are sensitive to current social needs, want to work in those areas, and are encouraged to do so by the foundations, industries, and citizens who provide their financial support. In turn, the R&D community disseminates the results of its work widely through all manner of specialized and mass media. To some degree this dialogue will take place with or without the intervention of a central government although increasingly the government has become not only a prime supporter but both a middle man and a prime consumer for R&D in all fields. Indeed, as suggested by Figure 3.4, the relationship among these three entities can be seen as consisting of over-lapping two component problem-solving dialogues. The people depend on the government as a resourcer to fulfill various needs;

[Insert Figure 3.3 here]

[Insert Figure 3.4 here]

FIGURE 3.3

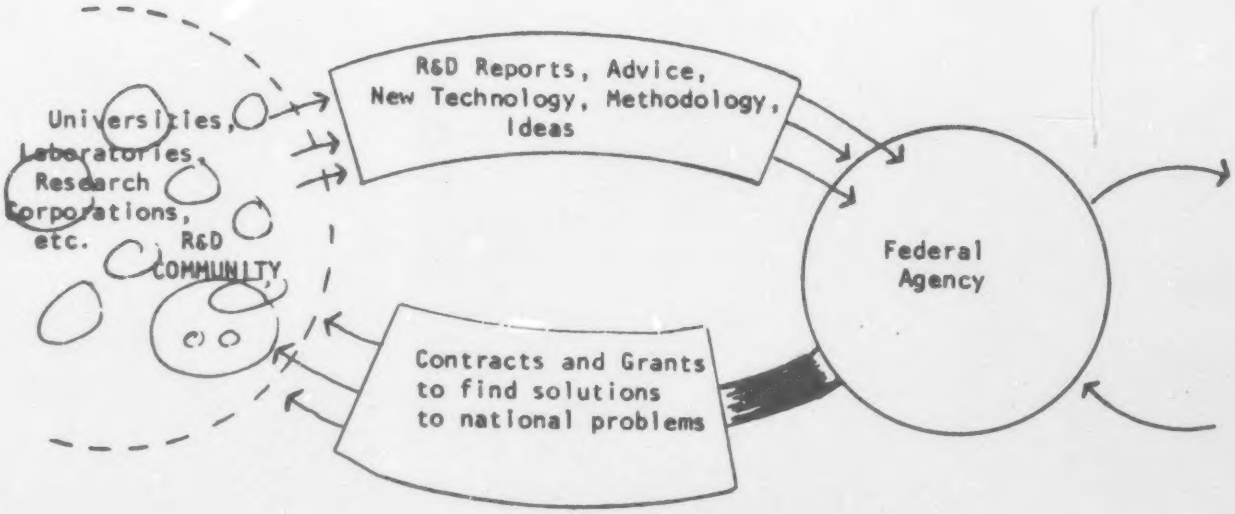
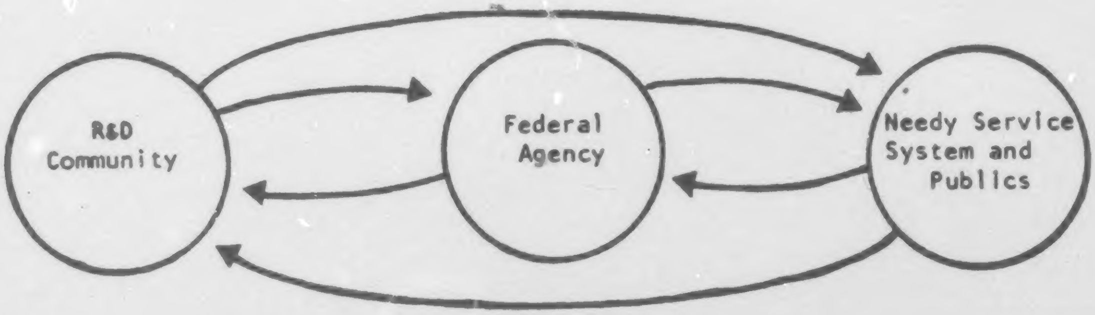
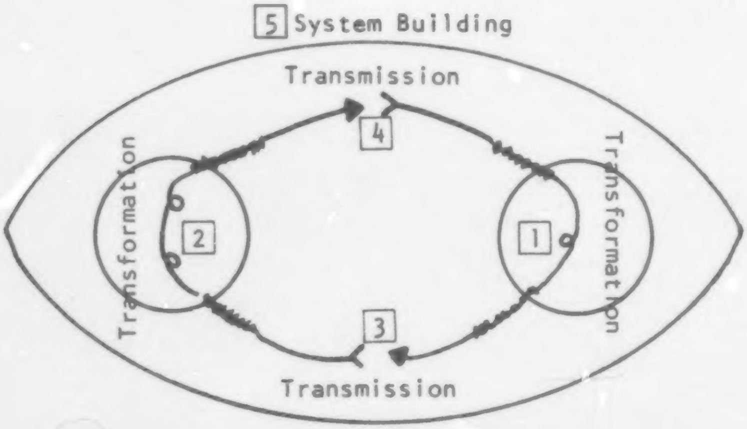

R&D Reports, Advice,
New Technology, Methodology,
Ideas
Universities,
Laboratories,
Research
Corporations,
etc.
R&D
COMMUNITY
Federal
Agency
Contracts and Grants
to find solutions
to national problems

FIGURE 3.4


R&D
Community
Federal
Agency
Needy Service
System and
Publics

the government as user, depends in turn on the R&D community as resourcer; and finally the people collectively depend on the R&D community directly as resourcer. Figure 3.4 also suggests a crucial point of emphasis in our research; we want to view federal agencies as *mediators of exchange* in a macrosystem of helping and problem-solving. We are not sure that most federal agencies now see themselves this way, but we feel that it is one possible model which points out (a) the function of federally supported R&D, and (b) the essential elements in the process of making R&D pay off for society.

FIGURE 3.5 Three Essential Aspects of the Problem-Solving Dialogue: (1) System Building, (2) Transmission, and (3) Transformation

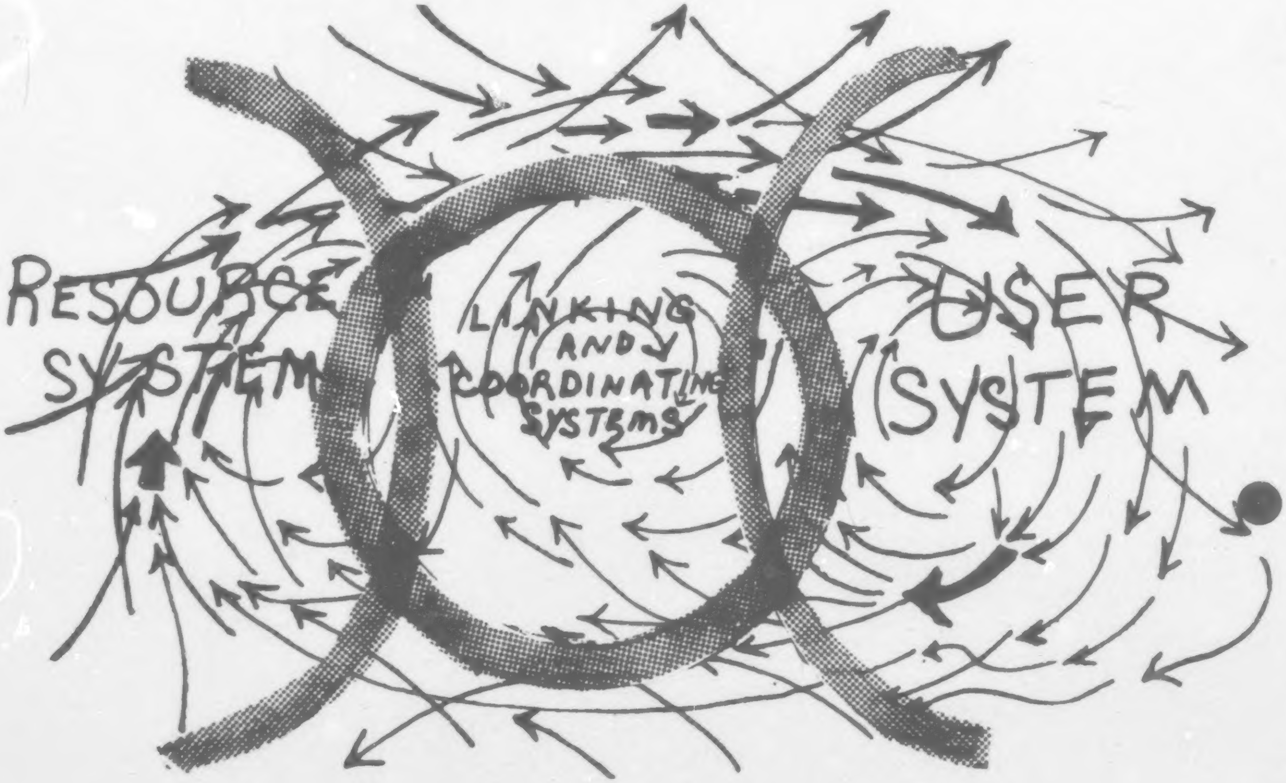


A system is a set of interdependent and interacting elements which go together to serve a common purpose. Therefore, the necessary conditions for the existence of a system are (a) the separate elements (subsystems, personnel, resources, roles, etc.) required to fulfill the system's mission; and (b) communication and coordination among the elements. Figure 3.5 suggests what is needed for a problem-solving dialogue system. First of all, there must be a user (1), and a resourcer (2), and there must be a means of 2-way dialogue between them (3) and (4). The two elements (there could, of course, be many elements) plus the flow between them equals the system (5). But when we look closer and we ask how the messages are created, sent, and received, we find that the dynamics of the system can be summarized in terms of two processes: *transmissions* and *transformations*.

Starting with the user's need, the first task is to *transform* need into an expression or articulated message of need. Subsequently, this message must be *transmitted* to resourcers (2). Then the need must be received and *transformed* by the resourcers into researchable questions, solvable problems or diagnostic statements. These statements, in turn, must be processed and, in effect, *transformed* into solution ideas, relevant answers, or potentially usable facts and artifacts. The solution outputs then must be *transmitted* back to the user (4) and finally they must be *transformed* again by the user into actual solutions or need reductions through his testing, consumption, or integration efforts. Thus, a microanalysis of a working system will always reveal a continuing sequence of transforming and transmitting.

There is no way to present a satisfactory picture of the complex knowledge flow systems which serve the various need sectors of our society. Figure 3.6 may suggest why this is so. Consider each of the arrows in this figure as one type of transmission and the spaces between arrows as transformations. Note that many arrows simultaneously go in both directions, indicative of the multiple-channel, multi-media (especially person-to-person and person-to-print), and pervasively redundant nature of communication about national problem-solving. Note also that different arrows originate at different points in the resource system and impact at different points in the user system and vice versa. Hence, effective transfer and problem-solving will depend on the amount of social integration and communication

FIGURE 3.6



within each system. Note thirdly that different arrows are of greatly differing lengths: some stretch all the way from one subsystem to the other, suggestive of the kinds of communications that can take place when scientists talk directly to policy makers and to the general public through popular media. Others are short and stubby, suggesting (a) the need for multiple linkage points along the way and (b) the fact that detailed and complex knowledge loads can usually be carried only by very specialized media which have specialized audiences. Fourthly, it should be noted that many arrows curl into the figure to form closed loops without spanning the whole distance from resource system to user system. In fact, effective transfer of knowledge to outsiders usually requires much internal dialogue among both research persons and users and, indeed, such problem-solving loops must also occur all the way along the knowledge flow chain. Finally, note the arrows entering and leaving the figure suggesting the inherently open-system nature of knowledge flow in a large and sophisticated society. Some important inputs arrive serendipitously from both random and planned interactions with other systems and with the environment.

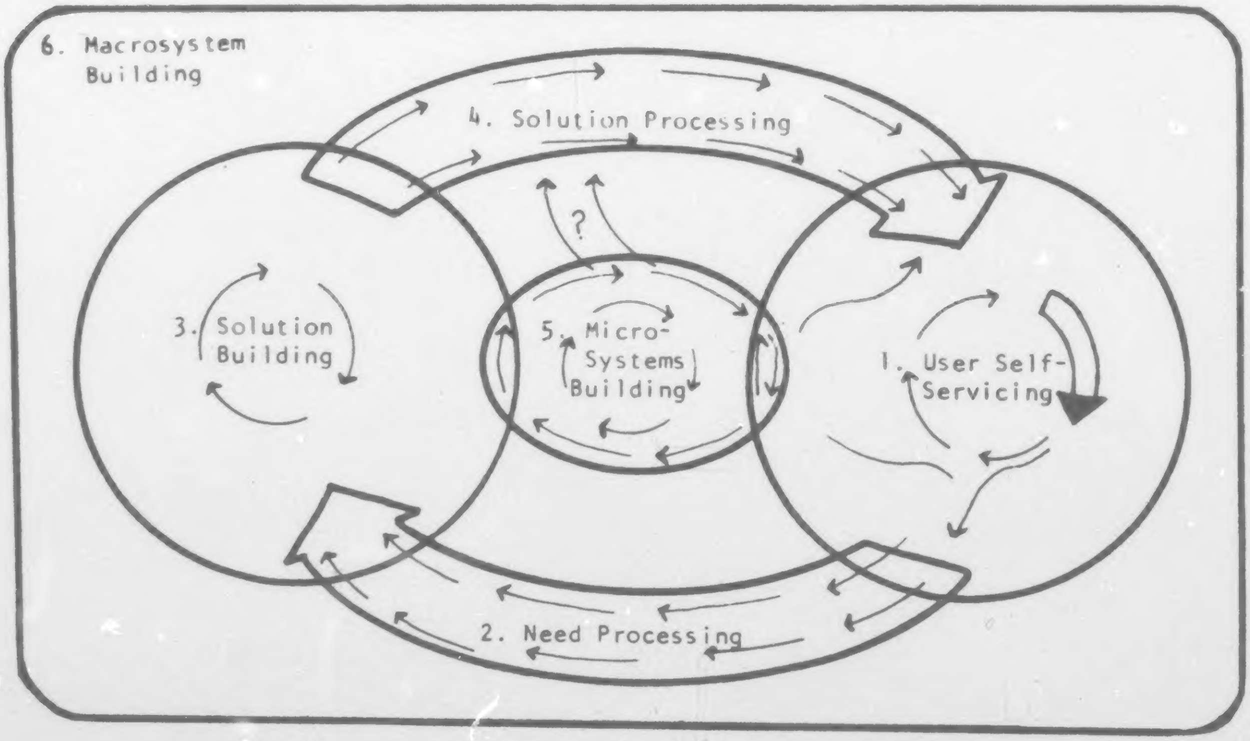
In spite of this complexity, we believe that societal knowledge flow processes can be studied systematically and subjected to a meaningful analysis which is reasonably comprehensive. *Such analysis and study can provide federal agencies with clearer images of their own role in the larger system and can steer them toward a coherent set of objectives for improving national problem-solving and improving the utilization of federally-sponsored R&D.*

II. THE FRAMEWORK

A. OVERVIEW

As a first step toward this kind of analysis we propose an elaboration of Figure 3.1 which can account for some of the complexity of Figure 3.6 in a functional schema. Figure 3.7 suggests six major groupings of functions that are necessary if the R&D community and the client groups in one need domain are to work together as one problem-solving system. The figure can be read clockwise starting with the user (1) as the one who has the need and feels the "pain" proceeding through the articulation and communication of that need (2) to resource systems to the generation of solutions and the transmittal of those solutions (4) back to users. Not be be neglected,

FIGURE 3.7 An Elaborated Framework for Analysis



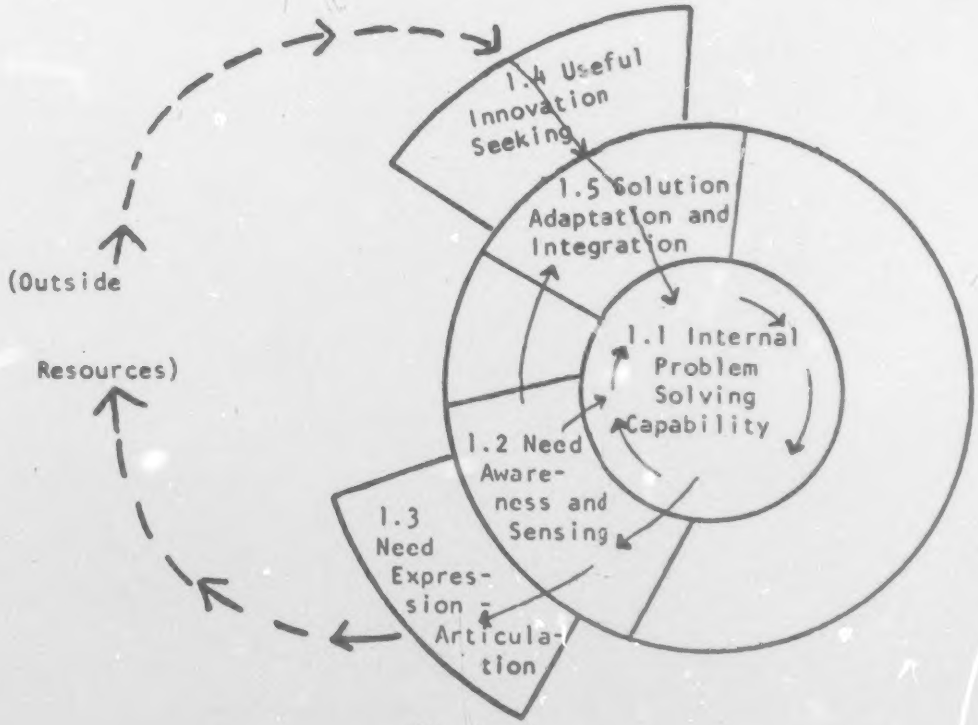
however, are functions we describe as "system building." At the micro-level (5) these activities consist of bringing together subgroups of resource persons to work on specific user problems at close range with genuine and immediate dialogue. At the macro-level system building functions include creating broad awareness of common concern, establishing special linking subsystems and improving the operations of all elements through system-wide governance. In the next few pages we will explain some of the specific activities which should go on within each of these six groupings.

B. THE SIX COMPONENTS

1. User Self-Servicing

Problem-solving systems should exist primarily to serve the needs of consumer-users. Hence, if the user serves himself without help or if a good job is done by those who provide direct services, the rest of the "system" is superfluous. Indeed there is a tendency among direct service providers to think that all effort and concern should be concentrated here on direct service (e.g., "just leave us alone and we can do it ourselves" or "just give us the money and stop harassing"). The federal analogy is the federal agency with a sharply defined and routinized mission, little or no research budget, and no interest in experimentation.

FIGURE 3.8 User Self-Servicing Function


1.4 Useful Innovation Seeking
1.5 Solution Adaptation and Integration
1.1 Internal Problem Solving Capability
1.2 Need Aware-ness and Sensing
1.3 Need Expres-sion - Articula-tion
(Outside
Resources)

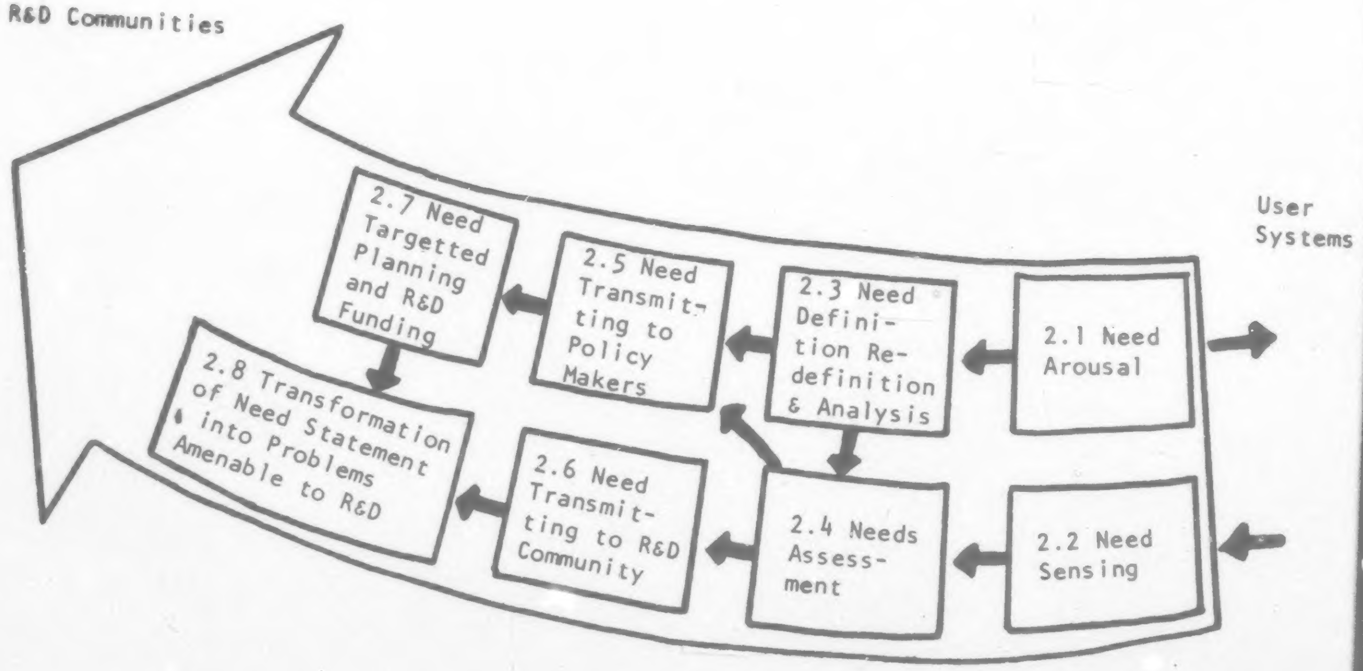
We would propose, however, (see Figure 3.8) that an effective and progressive user servicing subsystem has a good localized problem-solving capability, (1.1), maintains a continuing awareness of its needs, present and future, (1.2), knows how to express its needs to potential resource persons and groups, (1.3), looks outward for innovations, (1.4), and is able to adapt new ideas from outside, (1.5).

A federal agency which was very "user-oriented" in its philosophy might focus its attention on helping the user help himself by providing training or support on any of the above subprocesses.

2. Need Processing

FIGURE 3.9

Need Processing Functions


R&D Communities
User Systems
2.1 Need Arousal
2.2 Need Sensing
2.3 Need Definition Re-definition & Analysis
2.4 Needs Assessment
2.5 Need Transmitting to Policy Makers
2.6 Need Transmitting to R&D Community
2.7 Need Targetted Planning and R&D Funding
2.8 Transformation of Need Statement into Problems Amenable to R&D

"Need processing" denotes the various activities required to communicate user needs to resource persons and systems. It is often seen as a political process because in a democracy the public is presumably able to choose leaders and policies which will work for them and help them by solving problems according to the needs which are deemed "priority" at a given point in time. Yet need processing is, in fact, an extremely complicated function which can be analyzed into several subprocesses, some of which are represented in Figure 3.9.

The most political and controversial of these need processing activities is "need arousal" (2.1). It is a fact that most users most of the time are either ignorant of their most important needs or complacent about them. Therefore, the awakening of needs can be seen as a necessary first step in the cycle of problem-solving and may involve a range of tactics from benign questioning and gentle moralizing to leading national crusades.

"Need sensing" (2.2) denotes helping a client to find or recognize needs that are already present but not clearly in focus. In contrast to "need arousal," need sensing leaves the user alone. It may come in the form of sampling opinion or "testing the voter's pulse." Such sensing may not go very far in defining what is really wrong but a good need sensor might know that something is wrong, e.g., that the people are frustrated and angry.

"Need definition" (2.3) is another important potential helping function which includes need clarification, differentiation, labelling, and classifying. With respect to this function it is important to note that definitions of need do not and should not stay put over time. Many of today's social ills were once defined as *moral* ones with responsibility and blame often assigned to the victims as "sinners." Redefinition of these same ills as *social* or economic problems has often pointed the way to new types of solutions and solution building processes. Ignorance, poverty, alcoholism, mental illness and highway death or injury are just a few of the areas where a redefinitional process has led to new solution building activities.

The task of quantitative needs assessment (2.4) has been routinely carried out since World War II in a few areas on a limited number of simple dimensions (such as the unemployment index). Some policy makers have become increasingly aware of the value of such measures and the need for accurate, detailed, and frequent monitoring of public needs on a variety of "social indicators." Such data would presumably be the raw material for new policies and new guidance for R&D efforts.

Information on needs has several potential audiences, one of which is the people themselves for whom such information serves as "need arousal" (2.1) and "sensing" (2.2). From a national problem-solving perspective, however, there are two other crucial audiences, the policy makers (2.5) and the relevant R&D communities (2.6). For proper transmission to these audiences, need data must be collated and inserted regularly in popular and specialized media.

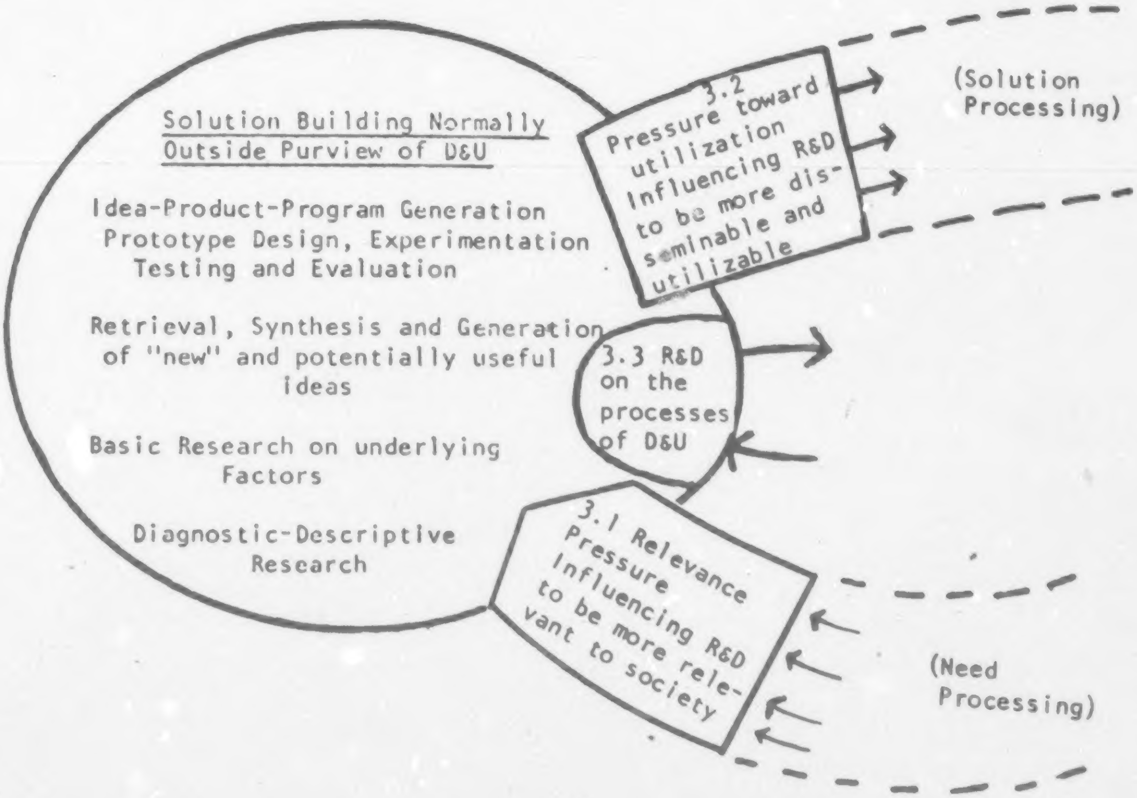
Moving to the resourcer end of Figure 3.9, we can discern some additional specialized transformation activities; an essential activity for policy makers is the translation of need priorities into programs and program priorities with specific expenditure authorizations attached to them (2.7). There is hardly any more important "message" for the R&D community to receive.

Finally, it is usually the researchers, themselves, who must make the final "transformation" of needs into problem statements and researchable questions (2.8). These in turn become the objectives and hypotheses of subsequent R&D projects.

3. Solution Building

Solution building is not the exclusive function of any one subgroup; it is a process in which all kinds of persons and groups, including users, can and must participate to some extent. Nevertheless, the society does turn to researchers, developers, technologists and scholars for help on the many problems for which self-servicing is inadequate. For simplicity of presentation we group these together as the "R&D community." "Science," per se, is usually defined as a procedure for the discovery and verification of knowledge about natural phenomena in general.

FIGURE 3.10 Solution Building Functions


Solution Building Normally Outside Purview of D&U
Idea-Product-Program Generation
Prototype Design, Experimentation
Testing and Evaluation
Retrieval, Synthesis and Generation of "new" and potentially useful ideas
Basic Research on underlying Factors
Diagnostic-Descriptive Research
3.2 Pressure toward utilization Influencing R&D to be more disseminable and utilizable
(Solution Processing)
3.3 R&D on the processes of D&U
3.1 Relevance Pressure Influencing R&D to be more relevant to society
(Need Processing)

The more recently introduced concept of "R&D" shifts the emphasis from valid knowledge building to the building of knowledge-based products and procedures which have been "validated" in terms of utility to people in fulfilling needs. Although this is not the place to review in any detail the various subprocesses that can be included in "R&D," some are suggested in Figure 3.10.

"Solution building" as conceived here encompasses basic research on human behavior and society, basic and applied diagnostic and descriptive research on relevant populations and their needs, invention and experimentation with solution ideas or innovations that might be relevant to solutions, and evaluation of potential solutions. It would also include theoretical and methodological studies. Among these various bits and pieces we would expect to see numerous transformations, transmissions, fusions, and interactions as necessary precursors to the ultimate production of valid and workable solutions and solution ideas.

In Figure 3.10, three processes have been singled out for special mention in the context of knowledge flow in a national problem-solving system.

Function 3.1 "relevance pressure" is increasingly evident in all fields of science but especially the social sciences. Some of this pressure comes from outside the scientific community in the form of federal grant programs constraints, directives, etc. (see again function set #2) but much of it is generated within the scientific community itself. Traditionally scientists in justifying their work have only had to answer the question "What does it contribute to knowledge." Today they must also answer the question "What does it contribute to society."

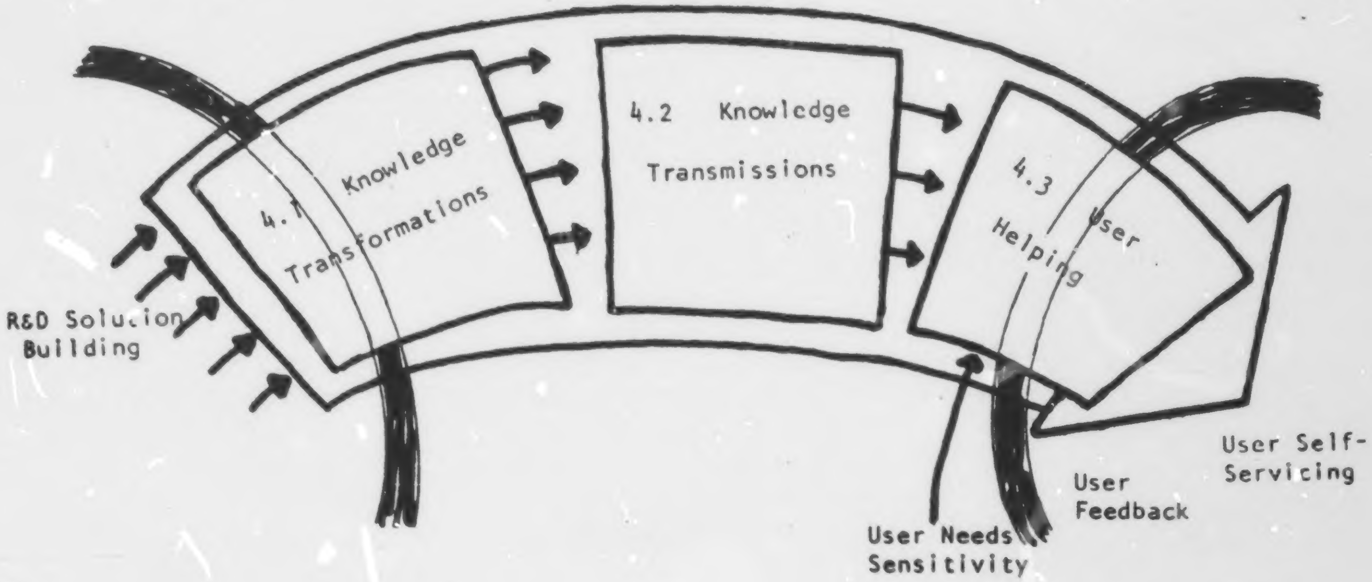
Function 3.2 "pressure toward utilization" is also gradually becoming a fact of life for the scientific community. No longer is it enough to publish in a scholarly journal (with one's scientific colleagues as the sole audience). Now the scientist is asked or motivated to publish more popular versions of his work, to consult with government policy makers, to feed back results to respondents, to put on demonstrations and conduct conferences at which practitioners and policy makers are an important part of the audience.

Still least recognized and understood is the important area of research which concerns itself directly with knowledge flow and utilization processes (Function 3.3 in Figure 3.10). The empirical basis for designing and improving national problem-solving is today woefully weak. Yet at some point in the not-too-distant future, we expect that the study of the utilization of science will come to be seen as one of the most important specialties in the R&D community.

4. Solution Processing

"Solution processing" consists of the many steps of transformation and transmission required to move a valid solution idea into implementation in a user system.

FIGURE 3.11 Solution Processing



A solution processing agency must have three overriding concerns: first, to transform R&D knowledge so as to maximize its value to the various audiences defined as "relevant"; second, to transmit this knowledge to and through the social system so as to reach the largest number of persons within these relevant audiences; and third, to insure that such transformation and transmission be to the self-perceived benefit of these audiences and the people served by the agency. Put more succinctly, the agency must transform knowledge, transmit knowledge, and help people to use the knowledge. It must perform all these activities more or less concurrently and in a coordinated fashion so that the transformations are indeed helpful and useful to people, and so that they are transmitted to the people on the right channel, in the right way, and at the right time.

It may be useful to imagine a hypothetical utilization agency which performs all three functions to the maximum degree. Such an agency would, of course, have a vast storehouse of solid, valid, and relevant research knowledge to draw upon. It would also have defined its audiences and most likely divided them into at least four sub-audiences: the policy makers, the operational professionals in the need system served by the agency, the concerned clients of the service, and the researcher community. The transmitting mechanisms (4.2) would allow any relevant piece of research knowledge to reach any person in any of these sub-audiences who needed it. The transformation mechanisms (4.1) would insure that such research knowledge arrives at the user's doorstep in the form in which he can understand, accept, and use it. This probably means that there must be at least four types of transformations: (a) for policy makers; (b) for practitioner-professionals; (c) for consumers; and (d) for researchers.

Finally, and most importantly, in order to fulfill its helping function (4.3), this maximal agency would be able to work in a continuing context of users' needs such that (a) the short and long term needs of the greater social system would be served; (b) the needs of the agency's clients would be served; and (c) the specific needs of policy makers, practitioners, and researchers within that larger need context would be served, also. The communication of need and the development of a shared awareness and consensus on need throughout the system (Function Set #2 discussed previously) are also crucially important to the helping function. However, there are additional considerations; for example, the maximal utilization agency must be aware of users' internal problem-solving processes (1.1) and must develop mechanisms of continuing dialogue between users and knowledge sources on both needs and solutions.

5. Microsystem Building

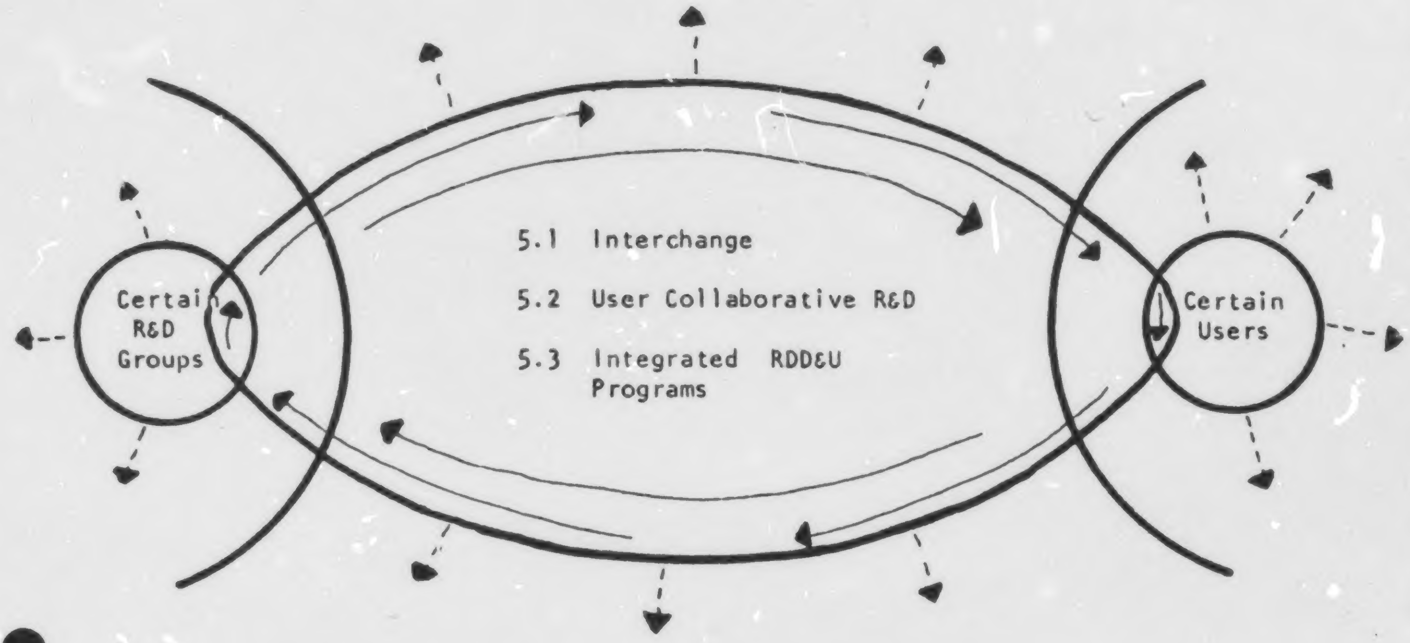
Figure 3.9 and Figure 3.11 suggest an elaborate division of labor and an extended chain of influence which is essentially linear in detail. There is a danger in such a detailed linear analysis of losing sight of the interdependence and systemic relatedness of these elements. There is also a danger that individual role holders in this elaborate chain will lose sight of the two-way dialogue which must underlie successful communication. For these reasons a sophisticated knowledge flow system will include some activities in which many elements of the problem-solving dialogue are simultaneously present and are allowed to interact on a small scale. We use the term "microsystem building" as a general heading to cover these activities. Their general nature and purpose are suggested by Figure 3.12.

[Insert Figure 3.12 here]

The most elementary form of microsystem building involves bringing together researchers (or developers) with representative users for purposes of dialogue about needs and solutions. These interchanges (5.1) should produce two-way influence to make researchers more attuned to user needs and more concerned about generating useful products while at the same time users are becoming more aware of the research process and the value of research findings.

"User-collaborative R&D" (5.2) is a somewhat more elaborate and organized form of microsystem building which puts researchers and users together in the same projects (sometimes called "experiments" or "demonstration projects") where both research and use are supposed to take place concurrently. To some extent users in this situation learn to be "researchers" while researchers "get their hands dirty" by serious involvement in user problem situations; there is strong pressure to deliver meaningful help to the user from the activity regardless of the research objectives of the enterprise.

FIGURE 3.12 Microsystem Building



The most elaborate and extended types of activity which fall within this category could be called "integrated RDD&U programs." These are activities which may include large numbers of users, practitioners, and researchers and possibly a number of projects spaced out over time. What makes them "microsystems" is the fact that they are planned and coordinated very explicitly around some specific goals related to user needs and are expected to be accomplished within a given time frame. These microsystems may contain on a small scale most of the elements that are needed in the society at large to undertake national problem-solving (i.e., those sets of functions identified in the outer rim of Figure 3.7). Hence, they can serve as kinds of "laboratories" or "hot houses" in which the larger network of relationships and functions can be modelled (see dotted arrows of Figure 3.12).

Microsystem building has several potential uses for the macro-system in addition to the "modelling" function just mentioned. First of all, it builds awareness and openness of researchers to users and vice versa. It also leads to specific linkages between a (usually small) subset of users and researchers. If these users and researchers are strategically located and represent leadership in their respective reference groups, then the linkages so established can be said to form a genuine bridge between R&D communities and user populations, a bridge on which both need messages (Function Set #2) and solution messages (Function Set #4) can travel freely.

Microsystems also can plan an important role in both solution building (#3) and user servicing (#1). When microsystem activities are well defined, well organized, and well evaluated, they can contribute meaningfully to general knowledge about the problem area and about solution alternatives. This is often implied in the labelling of these activities as "experiments," "pilot programs," or "demonstrations." Expectations in this regard are more likely to be realized if the research collaborators have good track records and have the major say in what happens. On the other hand, microsystems can also serve as models of good user self-servicing (Function Set #1) particularly if the users are able to be true collaborators, have major decision making power in the program, and use that power to improve their long term self-service capacity.

6. Macrosystem Building

The role of government in the U.S. is generally not to do research or service directly but to hover over the complex of institutional forms which provide service and perform social problem-solving, attempting to serve and represent the general public and the general good by "coordinating" separate efforts. Government should see to it that R&D communities and service professions work together with users so that they collectively function as a problem-solving system to the benefit of the society.

The agencies of government can work to shape and reshape the macrosystem in various ways, e.g., through exerting direct control on certain individuals and subsystems via legal sanctions, rules and regulations, through protection of other individuals and subsystems, through financial support and subsidy of various subsystems, and through the creation of new roles, institutions, and other facilitating mechansims to fill recognized gaps and to help the total system function more effectively and beneficially.

No one unit within a large federal agency will have responsibility for all these functions but each can contribute in a major way to the government's ability to function as a problem-solving facilitator. First of all, every sub-agency should have a coherent and consensual image of the evolving macrosystem so that gaps and points of need can be identified and monitored. We might call this "macrosystem mapping and modelling" (6.1).

Figure 3.13 suggests some of the social structural elements that might go into a mapping of a problem-solving macrosystem. The complexity of the system as suggested by the figure is truly awesome, but several

[Insert Figure 3.13 here]

major interfaces can be noted, e.g., consumer-to-service professions, consumer-to-industry, industry-to-university, university-to-government, and so on. At each major interface effective linkage (2-way communication on needs and solutions) is vital. We should also note from this figure and our earlier discussion that there must be a continuous chain

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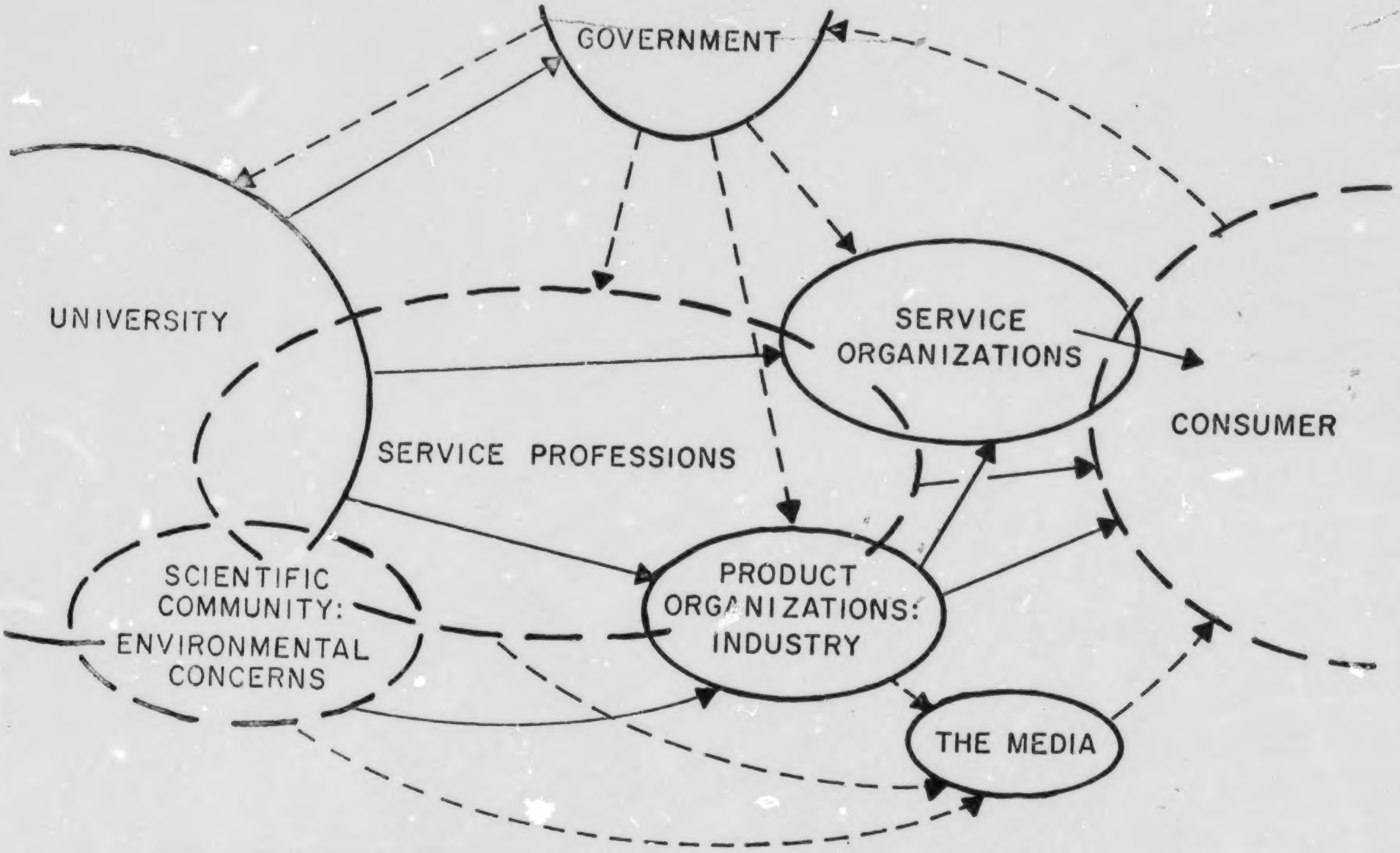
FIGURE 3.13

Elements in a Map of a National Problem-Solving System


GOVERNMENT
UNIVERSITY
SERVICE ORGANIZATIONS
CONSUMER
SERVICE PROFESSIONS
SCIENTIFIC COMMUNITY: ENVIRONMENTAL CONCERNS
PRODUCT ORGANIZATIONS: INDUSTRY
THE MEDIA

of communication links so that the complex of real organizations and overlapping groupings represented in Figure 3.13 can function like the ideal problem-solving system represented in Figure 3.7.

It should be born in mind that no one agency, government or otherwise, performs or controls the performance of all the functions of social problem-solving. Yet government can and does play several important roles within it, first of all by representing the consumer and the consumer's interest, by coordinating, monitoring and regulating private sector subsystems, by supporting most research and development, and by filling gaps in the system by (a) providing direct government services when needed and (b) by establishing new elements through contracts, matching funds, expansion grants, and so forth.

System modelling and mapping are activities that no one unit should perform exclusively without collaboration with other parts of the federal agency, especially top policy and planning personnel. Strategically located private sector decision makers, observers, and scholars also need to be involved. However, several key functions in system modelling can be played by specialized units through providing information to help in defining and delineating the system and its elements (the relevant user population, professions, reference groups, R&D communities, etc.). Some unit should also be charged with the responsibility of monitoring the macrosystem (6.2), i.e., funnelling the streams of "social indicator" data which assess the current health of the system and the changing needs and problems of users.

There may also be a need for a specialized unit to be a promoter of linkage (6.3) generally within the macrosystem (researchers↔developers ↔practitioners↔policy makers↔consumers, etc.) and between macrosystems in different need areas (education↔manpower↔health, etc.). Linkage can be promoted through bringing people together in face-to-face meetings, conferences, workshops, etc., through developing new types of media, and through increasing all types of message flow.

Another important macrosystem function involves filling recognized gaps (6.4) with new roles or organizational forms. Special types of libraries, information centers, research utilization specialists, linker roles, "think tanks," "utilization tanks," or whatever may need to be created. Each such new institutional form represents an alteration of the structure of the macrosystem and should be justified on the basis of its fit with the emerging macro-model of national problem-solving.

A final function related to macrosystem building is the creation of awareness by system members of themselves as part of a system (6.5). This function is particularly important for areas which are emerging as problem foci and where no one discipline of science or practice adequately encompasses the need domain.* Also when a macrosystem is shifting its emphasis or its definition of "users," "clients," etc., it may need to communicate this shift widely to all who may be a part of the system. Awareness building is usually done more efficiently through mass media and through the evocations of highly visible and strategically located opinion leaders.

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*The Social and Rehabilitation Service represents an outstanding example in this regard.

III. APPLICATIONS AND QUALIFICATIONS

In the chapter which follows, we will apply the model described above to the detailed workings of each of the four agencies in our study. We believe that the model has been very successful as a means of categorizing, interrelating, and comparing as great number of seemingly disparate D&U activities regardless of the particular D&U system. On the other hand, we should be careful not to apply the model with a heavy hand without due regard to a few subtleties and qualifications. In this last section of this chapter, we will discuss a few of these in the hope that they will provide a more sophisticated view of the problem.

A. HOW MACRO CAN YOU GET?

The limits of any "system" are arbitrary from a strictly analytical point of view. A system may include as many or as few persons, groups, or elements as the analyst wishes to identify. Likewise, resourcer-user problem-solving systems may include any designated set of resource persons and resources, any set of users, and any set of user needs.

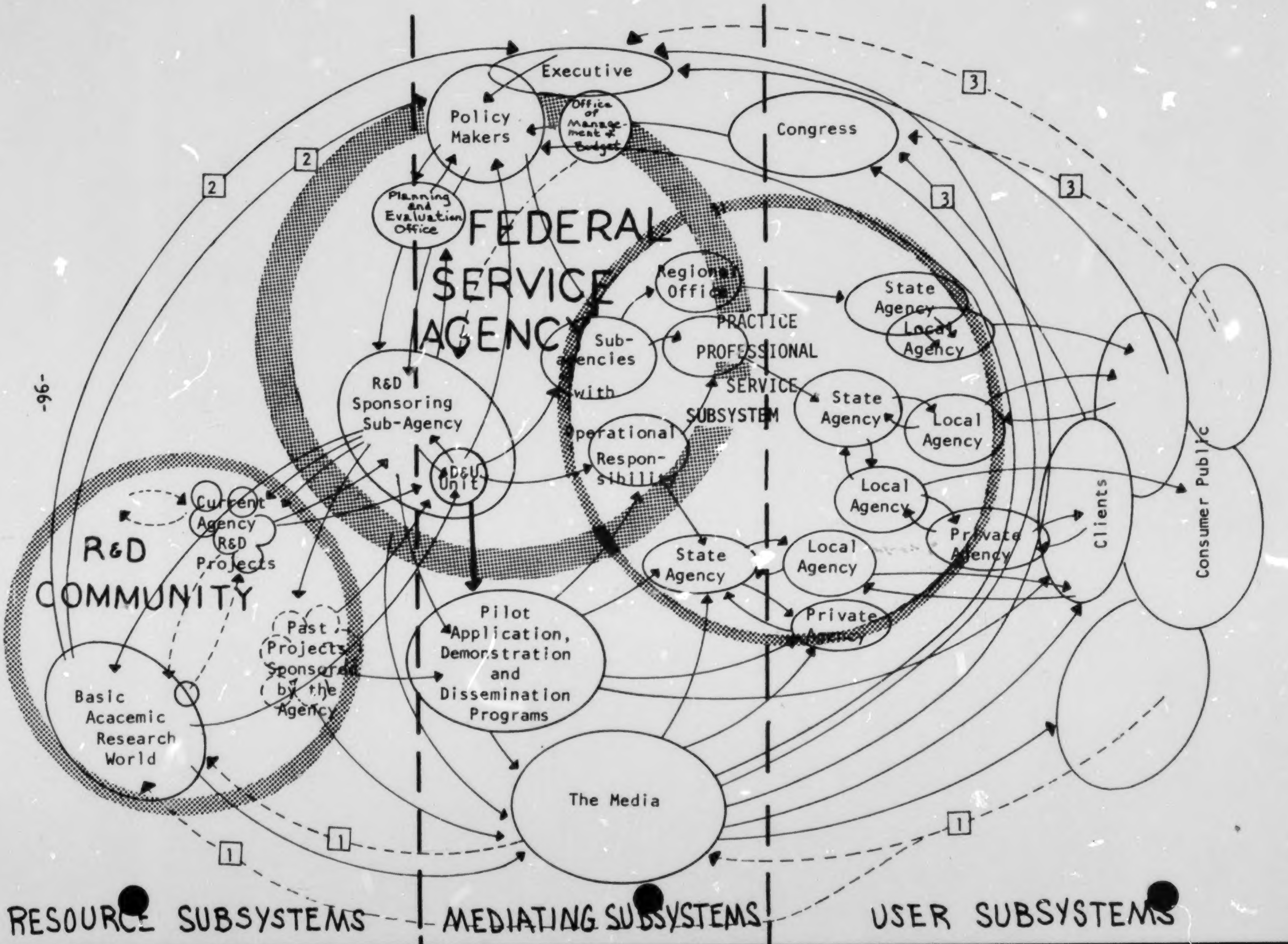
Yet in using a systems model as a means of analysis, monitoring, and governance, a course which we are suggesting for D&U, the limits of the system in all these regards must be set in some way. Hence, we need to define the body of R&D which constitutes the basis of system "messages" from resourcers to users, the need domains within which relevant need "messages" ought to be flowing from users to resourcers, and the various persons and groups which constitute the resourcers, users, and message mediators at various points in between.

The agencies we have studied in this project have some trouble defining the limits of their "systems," and if we examine Figure 3.14, perhaps we can understand why. This figure is drawn to suggest the relative position of the D&U unit within a universe of resource systems, users, policy makers, administrative hierarchies, service organizations, mediators, etc. Only a few of the connections are indicated and the figure is drawn primarily to show (a) the relative distance and position of the D&U unit with respect to major groups in its environment and (b) the most significant interfaces at which the unit must operate.

The figure should show the vastness and complexity of the "systems" we are talking about in spite of the fact that it is grossly oversimplified. Very loosely speaking, the left hand side of the figure depicts "resource" groups, the center depicts mediating groups, and the right hand side depicts users.

FIGURE 3.14

The "System" for a Typical Federal D&U Unit


Executive
Policy Makers
Office of Management & Budget
Congress
Planning and Evaluation Office
FEDERAL SERVICE AGENCY
R&D Sponsoring Sub-Agency
D&U Unit
Sub-agencies with Operational Responsibility
Regional Office
PRACTICE PROFESSIONAL SERVICE SUBSYSTEM
State Agency
Local Agency
State Agency
Local Agency
Local Agency
Private Agency
State Agency
Local Agency
Private Agency
Clients
Consumer Public
R&D COMMUNITY
Current Agency R&D Projects
Past Projects Sponsored by the Agency
Basic Acacemic Research World
Pilot Application, Demonstration and Dissemination Programs
The Media
1
1
1
2
2
3
3
3
RESOURCE SUBSYSTEMS
MEDIATING SUBSYSTEMS
USER SUBSYSTEMS

The outer edges of the figure represent important D&U transactions over which the D&U unit is likely to have no control or influence whatever. These include $\boxed{1}$ the subtle but pervasive influences of public needs and desires, and social trends on the academic community as a whole and on would-be problem solvers and resource persons at all levels. Sometimes these influences are exerted through the mass media.

A second set of transactions over which little control is likely to be exerted by the D&U unit involves policy advice and guidance $\boxed{2}$ provided to the highest levels of the national government by prestigious academics and scientists in various specialties. The influence of academia in this regard has generally been increasing in the last two decades and is most evident in the council of economic advisors and in the appointment of university professors to high government posts.

The D&U unit also has virtually nothing to do with the communication of needs from user interest groups and the public at large $\boxed{3}$ to the highest levels of government or to state and local government. Such transactions occur mostly through traditional political processes reinforced by the mass media.

While these three forces are peripheral to D&U agency concerns, they form the environment within which it operates. Therefore, the unit must be sensitive and alert to what is going on in each area.

The heavy circle in the figure encloses the subgroups which have the most operational contact with and control over the D&U unit. Relations with any of these groups could represent a target for improved linkage, and in our interviews we found that various units had worked with each.

The relative position and power of the D&U unit within this sphere of influence will change from time to time and can be deliberately shifted up, down, in, or out, by the policy makers and, to some extent, congressional action. As we have seen in Chapter Two, there has been a fairly steady trend of D&U, first into separate visibility within the R&D sub-agency, then in some cases, elevation from branch to division, then in some cases (NCEC) to equal organizational status with R&D.

The figure also illustrates the extreme distance in organizational terms between the D&U unit and the ultimate user. In fact, "users" are typically state agency personnel or staff members of the federal and regional offices with responsibility for administration of large federal programs of aid and service. Usually, the D&U unit has very little influence with these groups other than through the persuasive power of its written products.

The one area of large influence and control for the D&U unit is its own set of sponsored projects (heavy arrow) which mix research, development, demonstration, dissemination, information services and consultation in various combinations. These projects can and often do act as a surrogate for or an extension of the D&U unit itself. Unless they are highly circumscribed by the language of the legislative mandate, they provide room for exploring various alternative strategies of D&U for various audiences free from the entanglements of the federal bureaucracy. In some ways, the D&U unit forms a resource and mediating subsystem together with its set of projects, and thus the interface between them becomes a critical focus of linkage.

We could go on and on identifying these important interfaces, but perhaps the point has been made. Difficult as it is to grasp this complexity, the D&U unit must try to do so, and it should also try to define its priorities for linking and supporting linkage within the macrosystem.

B. CAN THE LINKAGE CONCEPT BE APPLIED EVERYWHERE IN THE MACROSYSTEM?

The most controversial aspect of our approach to D&U analysis may be our tendency to apply the problem-solving-dialogue-linkage paradigm (Figure 3.1) to virtually every transaction in the social system. We will argue that this broad application of the concept is useful and appropriate, provided that it is understood correctly.

1. It is a model, not a description of reality.

In the first place, it should be understood that this model does not necessarily describe an existing state of affairs for any possible resourcer-user pair. Communication may in fact flow only in one direction and perhaps this is typically the case. Nevertheless, the model poses the question: how does a one-way exchange fit into a problem-solving system? To answer such a question, we must look at the *two-way* flow or potential flow directly or through intermediaries which completes the cycle and establishes a quasi-stationary equilibrium.

2. It is a model, but not necessarily the projection of an ideal.

We do not feel that all or even most communication ought to be two-way in any literal sense. People can be influenced in a beneficial way by new knowledge which they had nothing to do with creating and for which they provide nothing in return. We would argue, however, that such successful transfer is far more likely when some forethought has been applied to the message regarding its potential utility for at least a hypothetical user. Figure 3.15 suggests this sort of vicarious linkage. Indeed, having this sense of users, their needs, and their likely response patterns is the essence of good writing and of good direction and production in film, television, or any other one-way medium.

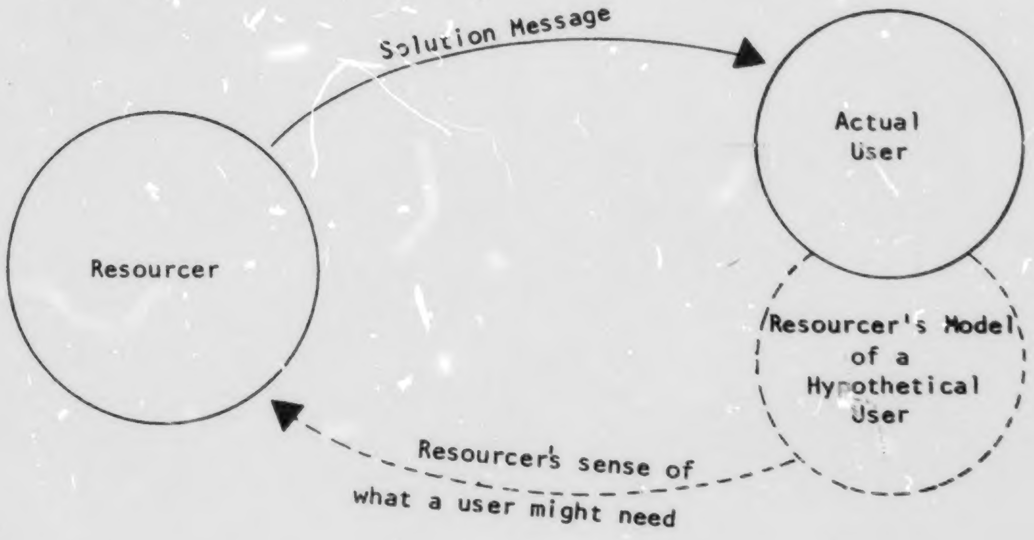
[Insert Figure 3.15 here]

It is furthermore quite conceivable that actual direct communication from users will provide less adequate images of the users' real needs and response patterns than the vicarious images which certain creative resource persons can conjure up by themselves.

3. Micro-linkage applies to every interface in a macrosystem.

Figure 3.7 and the analysis in Chapter Four may appear to some readers to indicate a series of one-way transfers which only link up when we look at the system as a whole. It is not our intention

FIGURE 3.15 Successful Transfer with Vicarious Linkage


Solution Message
Actual User
Resourcer
Resourcer's Model of a Hypothetical User
Resourcer's sense of what a user might need

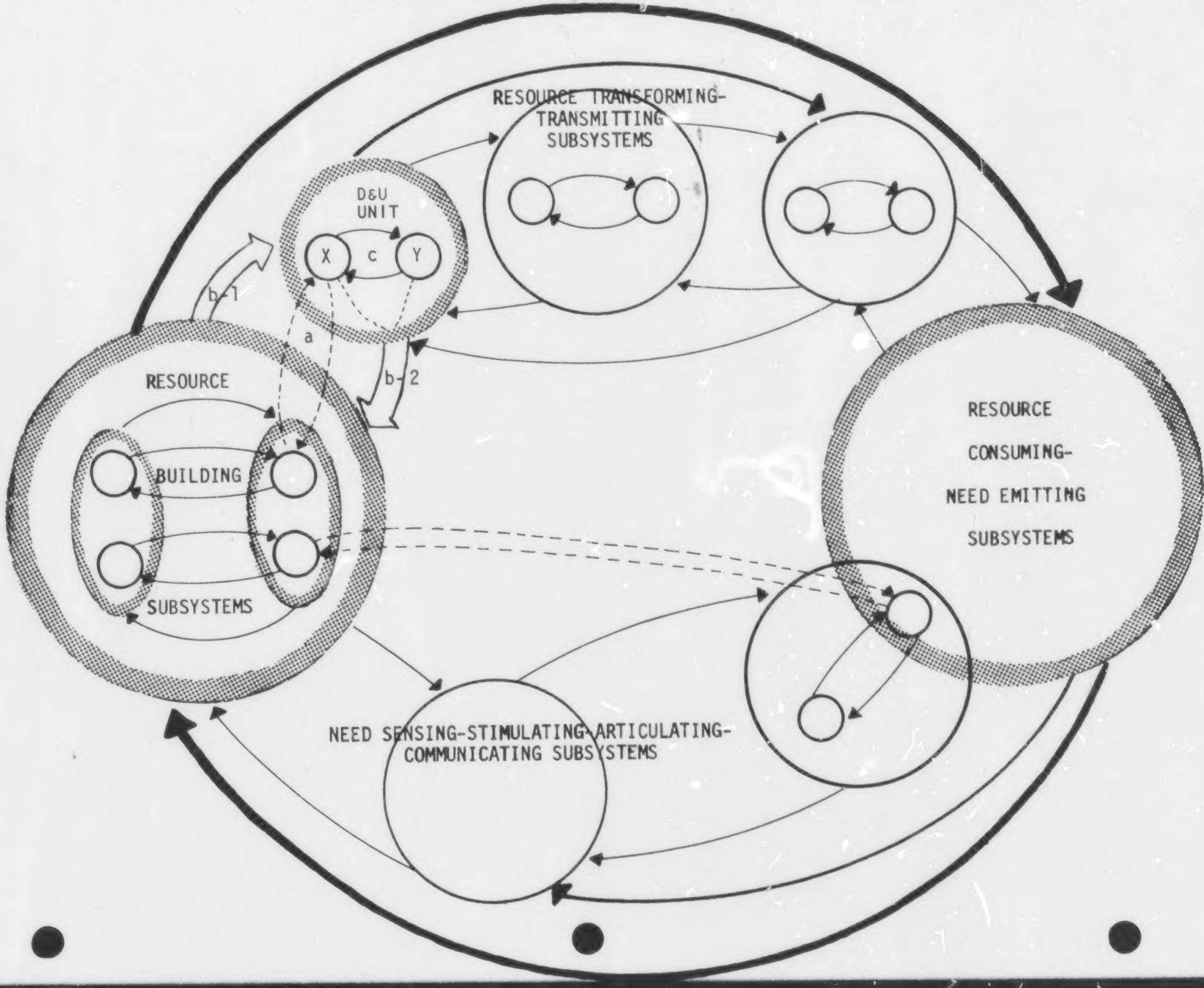
to convey this meaning. On the contrary, it can be argued that each sub-function in the analytical schema bespeaks (a) a transmission, (b) a transformation, (c) an interface between sender and receiver, and (d) a dialogue between sender and receiver regarding the function in question. Thus, the macrosystem of D&U might be displayed as in Figure 3.16, with flow throughout being mediated by two-way problem-solving dialogues at different levels.

[Insert Figure 3.16 here]

4. Interpersonal and interorganizational linkages are different in kind but similar in configuration.

Figure 3.16 also illustrates another important tenet of linkage theory, namely that the same problem-solving paradigm can be applied to social organisms of any size, whether they be interacting persons, groups, organizations, communities, reference groups, states, or nations. Point "a" in the figure may locate a dialogue between two persons at a given point in time or an accumulation over time of messages on all media transmitted between the two. Points b-1 and b-2 signify communication between the two organizations of which each person is a member. 'b-1' and 'b-2' also include numerous messages that may appear to be one-way from the point of view of any particular person in one organization or the other. Thus, it is not true that interorganizational linkage is merely the sum of all interpersonal linkages.

FIGURE 3.16 Macrosystem Linkage Comes About Through Micro Linkage


D&U
UNIT
X
c
Y
b-1
a
b-2
RESOURCE TRANSFORMING-
TRANSMITTING
SUBSYSTEMS
RESOURCE
BUILDING
SUBSYSTEMS
RESOURCE
CONSUMING-
NEED EMITTING
SUBSYSTEMS
NEED SENSING-STIMULATING-ARTICULATING-
COMMUNICATING SUBSYSTEMS

On the other hand, true interorganizational linkage is usually dependent on interpersonal linkage within systems. Thus, if 'b-1' messages come primarily to person X and 'b-2' messages go out primarily from person Y, then X and Y must be firmly linked ('c').

C. ALL RESOURCERS AND USERS ARE NOT EQUAL

Even within the smallest social groups, there is a hierarchy or precedence of influence which controls the flow of knowledge to a very high degree. The problem-solving dialogue needs to be considered within this context. Countless research studies in the field of communication point to the importance of opinion leaders as the primary means by which new knowledge comes to affect large numbers of people. Since the concept was first invoked over 30 years ago, literally hundreds of studies have built a body of knowledge on this topic which is highly relevant to our understanding of D&U systems. Figure 3.17 suggests some of the patterns which we would predict for any D&U system as a result of these studies.*

[Insert Figure 3.17 here]

Certain persons are likely to become aware of their problems and to reach out for solutions long before the user system as a whole has woken up. We could call these people "innovators." They are likely to be somewhat marginal to the great mass of users but to be more closely in contact with media and with certain members of the R&D community. They are the kind of people most easily enticed into collaborative R&D microsystems and they play a very useful role in this regard because they set an example particularly for leaders or opinion leaders. The example they set may be good or bad, i.e., if they succeed and prosper, the opinion leaders get curious and maybe jump on the band-wagon, sensing that to be left behind may mean to lose leadership status . If, on the other hand, the innovators appear to fail or to fumble around or to be hopelessly enmired in unanticipated consequences, the opinion leaders hang back.

A similar set of social dynamics may occur within the R&D community itself. Though little research has been done on this, there is no question that research specialties are dominated by a few stars who have inordinate influence not only on colleagues but also on policy makers and other would-be users.

The purpose of this discussion is not to explore these possibilities fully, but only to suggest another set of variables which condition the problem-solving dialogue. Figure 3.17 suggests a number of hypotheses regarding D&U systems which should be investigated. Unfortunately, they were mostly outside the bounds of the present comparative project.

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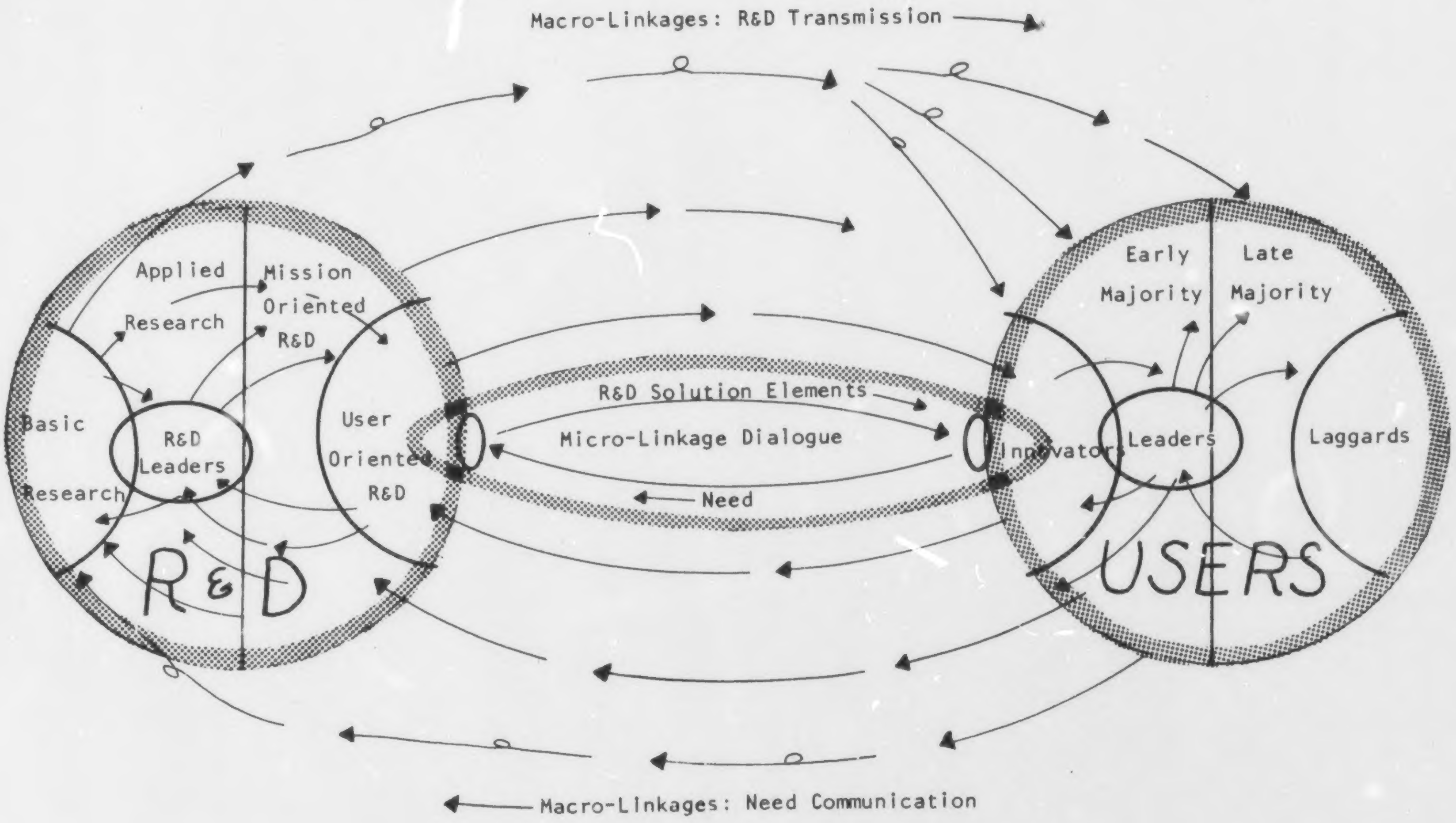
*Especially as summarized by Rogers and Shoemaker (1971).

FIGURE 3.17

Social Itineraries of Problem-Solving Knowledge


Macro-Linkages: R&D Transmission
Applied
Research
Mission
Oriented
R&D
Basic
Research
R&D
Leaders
User
Oriented
R&D
R&D
R&D Solution Elements
Micro-Linkage Dialogue
Need
Innovators
Early
Majority
Leaders
Late
Majority
Laggards
USERS
Macro-Linkages: Need Communication

CHAPTER IV

INTERAGENCY COMPARISON ON D&U FUNCTIONS

I. INTRODUCTION

It is the purpose of this chapter to compare and contrast the four D&U units on each of the six D&U functions presented in the previous chapter. The information presented on each agency and its D&U unit comes from interviews with agency staff members which were conducted during the case study phase of the project.

A note on the data gathering/refining process is in order. As our model evolved parallel to the case study interviewing, we coded items of information in the interview summaries according to the applicable section(s) of the model. Since the model itself was not used to collect the information originally, however, and since there were doubtless errors of both commission and omission in our agency profiles, we returned to each of the D&U units for a meeting with staff members. In these meetings, staff brought errors and omissions to our attention and produced examples of activities to fill in gaps in their model summary. A corrected version of the profile was then drafted.

The first section of this chapter entails a short summary of each agency's work in each area of the model. These summaries are intended only to provide the reader with a framework in which to place the detailed comparisons and are not intended to be complete characterizations of the agency or its D&U unit. The second section presents a more detailed description of each agency's D&U activities as compared with each other and with a theoretical D&U model.

A. SUMMARY COMPARISONS OF THE FOUR D&U UNITS

Function Set #1. User Self-Servicing

MAXIMAL: An effective and progressive user self-servicing subsystem has a good localized problem-solving capacity, maintains a continuing awareness of its needs, present and future, knows how to express its needs to potential resource persons and groups, looks outward and inward for innovations, and is able to adapt new ideas. Maximal D&U activities in this area would focus on helping the user help himself by providing training or support on any of the above sub-processes.

MA: Very little process helping is provided by the Division of R&D Utilization in the form of training or techniques for receiving or using knowledge; however, several Job Coaching manuals that have been developed or sponsored potentially serve this function.

SRS: Although the Research Utilization Branch does not have sole responsibility or resources and capacity to fulfill user self-servicing functions, they do attempt to link up to such efforts of other units in SRS. For example, RUB has played a major role in training efforts among the Research Utilization Laboratories and the Research Utilization Specialists. Much of this training has been oriented toward building human relations and problem-solving skills and is user-centered in emphasis.

NIMH: In the Mental Health Services Development Branch, user self-servicing is promoted by staff consultation to community mental health centers, "how to" manuals focusing on problem-solving procedures, and projects concerned with techniques of training for planned change.

OE: Although developing user self-servicing is not central to the mission of the National Center for Educational Communication, there is an emphasis on training local intermediaries as special process helpers; the extension agents are supposed to serve as one method to give users technical and programmatic assistance in locally-initiated problem-solving activities.

COMPARISON: Across the four agencies, access to clients varies as a result of historical relationships with clients, mandated posture to them, size of the units, and level and extent of activity of the client groups themselves. User self-servicing activities range from NIMH's consultation work with clients to MA's past mission-dictated separation from line activities at the state and local level. Relative size of client groups to available D&U unit staff also appears to be an important factor.

Function Set #2: Need Processing

MAXIMAL: Maximal D&U functions in the area of need processing would include various activities required to communicate user needs to resource persons and systems. Transformation activities such as need arousal, need sensing, need definition, and needs assessment are necessary for transmission of needs to policy makers and to the R&D community. Additional specialized transformations include the translation of need priorities into research and development programs with dollar authorizations and into problems amenable to R&D.

MA: Staff of the Division of R&D Utilization feel that they do not have primary responsibility for need processing or for determining the direction of the R&D program. ORD, as a whole, is responsible for need processing and the planning of future R&D programs; the Division generally applies its knowledge of user needs in relating users to products of the R&D program.

SRS: The Research Utilization Branch is involved in the Operational Planning System of SRS which allows for annual updating of objectives and design of research proposals to meet these objectives. Although not the direct responsibility of RUB, needs are transmitted to various policy makers by means of the yearly R&D Strategy; other means of transmission include the R&D Brief Series, RU Specialists, and the "Bidder's Conference."

NIMH: Need processing activities in the Mental Health Services Development Branch appear to be heavily influenced by researchers and by staff members working in consultation both with researchers and with mental health personnel. Although most need processing activities are carried out on an informal basis, more formal efforts include peer review panels and Branch-sponsored needs assessment projects.

OE: In general, need processing activities in the National Center for Educational Communication seem to be stronger in the area of need transformation than in the area of need transmission. Although user need input is stressed in NCEC programs and projects, priorities are written into legislation and come down from the highest level.

COMPARISON: In general, it appears that the four D&U units are only peripherally active in need sensing which has the objective of producing new R&D. The units do not serve as need monitors for their agencies' research programs; policy makers or researchers themselves tend to assume this responsibility.

There is more need sensing activity in the units for their own clients, and for the research the units produce. NIMH's closer link to its smaller number of clients results in the greatest activity as need-sensor. Two of the units (NIMH and OE) have undertaken formal need sensing studies with clients in the field; MA's and SRS's activities are formalized in the agency planning process, but not vis a vis field clients.

Function Set #3. Solution Building

MAXIMAL: Although most solution building functions lie outside of the domain of D&U, three processes can be identified as maximal D&U activities in this area: influencing R&D to be more relevant to society; influencing R&D to be more disseminable and utilizable; and research on the process of utilization itself.

MA: Staff members of the Division of R&D Utilization are able to apply considerable pressure toward relevance and utilization of certain applied research and demonstration projects through involvement in the "buddy system" and also by intervention in final report writing for projects. Several efforts have been made to conduct R&D on the D&U process, although many of these efforts have been more concerned with the improvement of D&U practices than with the D&U process itself.

SRS: Guidelines developed by the Research Utilization Branch for final report writing and "instructions" for grantees to include utilization requirements in their research proposals have influenced R&D output to be more usable and relevant. RUB has sponsored an evaluation of the RU Specialists plus other projects designed to improve the process of dissemination and utilization.

NIMH: Indicative of the pressure toward relevancy and utility of R&D in the Mental Health Services Development Branch is the list of criteria used by review panels in evaluating research proposals; this list, developed in a Branch-sponsored project, includes items on project relevance and utilization. Although there has been some difficulty in obtaining funds for research on the D&U process, several projects have been sponsored that have had effects on Branch operation. The Branch has no influence on research performed elsewhere in NIMH.

OE: In the National Center for Educational Communication, pressure toward relevancy and utility of R&D is encouraged through proposal negotiation and in the development of new program areas but this influence does not extend to the bulk of the U.S.O.E. R&D effort. The application of R&D in the area of D&U is one of the five specified objectives of NCEC and staff have been very active in both producing and using research on D&U.

COMPARISON: All four units have made some impact on the relevancy of research through the guidelines, suggestions, etc. added to research proposal requirements; a somewhat greater impact on disseminability of research has resulted from requirements for final reports. There has been more success closer to home (i.e., in the R&D funded by the units), and only in the recent past have the units begun to have their guidelines imposed on all of the research sponsored by their agencies.

Function Set #4. Solution Processing

MAXIMAL: Maximal D&U activities in the area of solution processing would include steps designed to move a valid solution idea into implementation in a user system. Such functions as transforming knowledge into usable forms, transmitting knowledge to appropriate audiences, and helping people to use knowledge would be subsumed under solution processing.

MA: The Division of R&D Utilization is probably strongest in the area of knowledge transformations; packaging, tailoring, and targetting R&D findings to specific auidences is a primary concern as is screening for quality materials. Although the Division maintains an in-house, manual system of storage and dissemination which generally allows them to provide documents at any time, this system operates exclusively for those products that have come out of its own R&D program and tends to be used most extensively by university R&D persons rather than practitioners or administrators. The Division does not have the resources to be a "user helper" beyond individual, informal cases.

SRS: Knowledge transformations conducted by the Research Utilization Branch include such products as the R&D Brief Series, two-page summaries of selected projects that spell out implications for users; tailoring to specific audiences seems to be a major Branch concern. Transmission activities are not as well delineated as are transformation activities; however, RUB is in the process of developing an SRS-wide information system, and has developed a guide on how to use other existing information systems. In terms of user helping, RUB acts as a linker to the various attempts at this function as performed by other units within SRS.

NIMH: Although the Mental Health Services Development Branch has not concentrated its efforts in the area of knowledge transformation, two new magazines, Innovations and Evaluation, have been designed as transformation devices. In terms of transmission activities, Branch efforts are handicapped somewhat by the decentralized nature of NIMH; however, staff members employ both formal and informal means to insure that knowledge reaches relevant audiences. Manuals, field consultation visits, and training projects are designed as user helping mechanisms by the Branch.

OE: Within the National Center for Educational Communication, the Educational Resource Information Center (ERIC) carries the bulk of transformation activities for the D&U unit. In many respects, ERIC is a model system equipped to do all of the print-based archival, integrative, and transformation functions necessary to give users complete access to the storehouse of knowledge in a major social problem area. Although transmission activities are not as strong as transformation activities in NCEC, there is a trend toward increasing the realm of these functions. NCEC employs various means to help users implement innovations based on R&D; for example, a system of extension agents will be expected to provide developmental assistance to local educational practitioners as part of their role.

COMPARISON: Three of the four agencies, MA, SRS, and OE, are strong in the area of knowledge transformations. None of the four D&U units are as heavily involved in transmission activities. SRS, NIMH and OE provide some user helping functions in terms of consultants and linking agents.

Function Set #5. Microsystem Building

MAX.MAL: Microsystem building refers to activities in which many elements of the problem-solving dialogue are simultaneously present and are allowed to interact on a small scale. Maximal D&U functions in this area would include interchanges between researchers or developers and users, user-collaborative R&D, and integrated RDD&U programs.

MA: In the Division of R&D Utilization, emphasis is placed on interchange situations, although these now occur on an informal basis. User-collaborative R&D also is stressed in the Division: in the model of "projects as disseminators," user involvement is encouraged in the early stages of projects. A good example of integrated RDD&U programs supported by the Division would be the Experimental Manpower Laboratories set up in priority areas of needs.

SRS: The Research Utilization Branch is beginning to experiment with the use of researchers "on-demand and on-call"; other such interchange situations are also promoted by RUB as are user-collaborative R&D projects. Examples of integrated RDD&U programs include that of the Public Assistance in Vocational Rehabilitation program and various activities of the Research Utilization Laboratory in the Jewish Vocational Service.

NIMH: Of the three functions subsumed under microsystem building, the Mental Health Services Development Branch appears to be strongest in the area of integrated RDD&U programs. The most salient example of such programs would be Branch efforts directed toward the children's area priority. The Branch has also sponsored some user-collaborative R&D projects, and although interchange activities have been encouraged, limited funds have prevented the Branch from being able to develop the full potential of these interchange situations.

OE: The National Center for Educational Communication appears to have had little direct involvement in microsystem building between researchers and practitioners throughout the educational establishment. However, increasing attention is being paid to the role of NCEC in this regard, and efforts toward building user-collaborative R&D and integrated RDD&U programs are being recognized as necessary prerequisites to user installation of R&D products.

COMPARISON: For microsystem building, system complexity appears negatively related to the proportion of effort expended in interchange and combined R&D and RDD&U projects. OE, in particular, had fewer such activities, although it is moving in that direction. The other three agencies, especially MA and NIMH have engaged in diverse activities involving these functions.

Function Set #6. Macrosystem Building

MAXIMAL: Although most macrosystem building functions lie outside the domain of any particular unit within an agency, several processes can be identified as maximal D&U activities in this area: modelling of the macrosystem, monitoring of the macrosystem, promoting linkage, filling recognized gaps, and building system awareness.

MA: The Division of R&D Utilization stresses the development of informal linkages within the Manpower Administration; one method used for this purpose is the "buddy system." Linkage between macrosystems is also emphasized. These linkages are helpful in terms of building awareness of the utilization system and in macrosystem modelling. Utilization laboratories have been supported where research, dissemination, and research on utilization can go on simultaneously with longer-term planning and funding.

SRS: The Research Utilization Branch has been working toward the development of an SRS-wide utilization system; however, lack of a common perception of the system has been a problem. RUB has stressed the importance of building networks and has served as a catalyst in many SRS efforts, e.g., research utilization specialists as linkers to the states. No unit in SRS has responsibility for building system awareness, although it appears that the new management procedures may be directed at this function.

NIMH: The Mental Health Services Development Branch is not in a position to engage in macrosystem building for NIMH; although there have been some efforts by NIMH as a whole to do this, past efforts have not been in the area of D&U. However, Branch members are participating in a newly-formed Study Group that is concerned with the problems of linkage and D&U in the NIMH system.

OE: The National Center for Educational Communication has done a great deal of gap filling and institution building. The network of specialized linking agents based in state agencies and the nineteen subject area clearinghouses within the ERIC system are examples of macrosystem building activities. In terms of system mapping, a study of the educational information need sensing network has been funded as has another national survey of innovation process and information use in school districts.

COMPARISON: There is quite a bit of variation in D&U unit activity in the area of macrosystem building. SRS and NIMH have been less active, comparatively, but for different reasons: in SRS the difficulty has been the lack of an integrated system to be modelled; in NIMH it is perhaps the difference in approach between the D&U unit and the majority of NIMH subsystems which is the cause.

B. DESCRIPTION OF D&U UNIT FUNCTIONS: MAXIMAL VS. ACTUAL

In the pages which follow, we will offer side-by-side comparisons of the activities of a theoretical D&U process, which provides all of the six function sets described in the previous chapter to the fullest extent, with each of the actual D&U units studied in this project. The theoretical model should be understood as the maximum rather than necessarily the optimum model, especially in consideration of resources available, legislative mandate, and other constraints affecting the actual agencies studied. These are activities we see as necessary for an agency, but not necessarily the job of any one D&U unit.

The categorical analysis which follows must be understood in the light of the analytical framework and rationale presented earlier. It cannot be understood outside of that context.

Function Set #1:
USER SELF-SERVICING

Maximal D&U System	*Manpower Administration (M.A.), Division of R&D Utilization*	*SRS Research Utilization Branch*
		RUB does not have sole responsibility for user self-servicing, nor does it have the resources and capacity to fulfill these functions. Indeed, some of these functions have been assigned to other units in SRS. RUB does see the need to link to other user self-servicing efforts, when they do exist, to insure that utilization of research becomes an integral part of these other training efforts and to insure that the "bases are covered" by someone.
1.10 Developing User's Internal Problem-Solving Capability It is important for users to have adequate internal processes of solving problems. Sometimes users need help on how to help themselves without such "help" being focused on specific pieces of research knowledge but rather on the user's own situation and own problems. The maximal D&U system is able to provide general problem-solving process help in the form of:	The Division appears to do very little process helping in the sense of providing either training or techniques for receiving and using knowledge. This might be an area for future expansion effort, although presently providing direct services is not a part of their mission and would certainly require more staff. Program administrators, e.g., USES and OEDP staff, are seen as having the responsibility of preparing the state and local offices for making use of knowledge, although it was not clear from interviews how central R&D knowledge was in this process.	For users within the SRS staff (e.g., department heads and other personnel in federal and regional offices), increasingly, this function will be assumed by the recently created Office of Organizational Development. This Office will provide special training to SRS staff and will conduct courses on problem-solving and the processes of management by objective and system analysis, all of which could be viewed as developing capability in a specific user group. The RUB, by itself, has few resources for developing process training or providing techniques for receiving or using knowledge. However, it appears that the Manpower Utilization Branch in the Rehabilitation Service Administration (RSA) in collaboration with RUB has potential for this type of training, and this potential has been tapped in a few instances (e.g., in the training of research utilization specialists by RUB and RSA).
1.11 Training in effective problem-solving procedures including diagnosis, setting objectives, resource linking, searching for and drawing implications from research, finding and choosing among solutions, adaptation, trial and gaining acceptance for solutions.	It appears that no unit has sole responsibility for this function, and some training efforts appear in various units. Some evaluation studies sponsored by OPE may assist in the development of user diagnoses, since OPE tries to involve users during the life of these evaluation contracts. This may also be an area of expansion for USES, since the State Employment Service Offices have training divisions. However the training, up to the present, has not been organized around the development of problem-solving procedures; rather, efforts have been focused on training staff for specific programs.	RUB has assisted the Institute for the Crippled and Disabled (ICD) in New York City, one of the RU Labs, in developing a clearinghouse to support the Public Assistance Vocational Rehabilitation (PAVR) program. ICD is also working toward the development of training material that will enable the state client group to use this information system in their own work with public welfare clients. Using short-term training money, RSA also developed a document in support of the PAVR project which indicated models for utilizing the expansion grant program. In building the abstracting effort for the SRS information system, RUB and RSA are also using short-term training money to develop models of how to use the information system. The end product will be a manual indicating the various ways of using the system, how to enter it, etc.

NIMH Mental Health Services Development Branch	*OE National Center for Educational Communication*
Much of the work of the MHSV staff, in consultation with their clients, appears to be directed to this area, with consultation centering on problems of the centers rather than focusing on specific pieces of research. However, the extent of such problem-solving consultation among all of the Branch staff members is not clear, especially given their other duties.	Developing user self-problem solving capacity is not central to NCEC's mission, although various OE training programs over the years have focused on this area, e.g., Cooperative Project for Educational Development (COPED). In theory, at least, the extension agent system which is now being developed is supposed to serve as one method to give users technical and programmatic assistance in locally-initiated problem-solving. NCEC staff often reflected this philosophy in their responses. One noted that NCEC should not have the function of technical assistance as it has to be provided from the intermediate or local setting, bringing in experts when needed. In order to train practitioners as effective resource-utilizing problem solvers, it was felt that a complete transformation of what OE is doing now would be required. As OE funds for training are administered through the National Center for Improvement of Educational Systems (a sister unit to NCEC), it is hoped that NCEC can influence their planning in the future, although NCEC has not done so in the past.
Some of the projects sponsored by the Branch may promote this type of training. A portion of a new project with the Human Interaction Research Institute will be designed as a training project to enhance Branch staff members' skills in consultation to promote change. One other project supports training in operations research.	NCEC uses workshops, training sessions, and technical consultant services in the area of process training. There is an attempt to train dissemination representatives in the methods for disseminating technical information to educators and to assess and upgrade their understanding and skill in linking to resources and in problem-solving.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
1.12 Providing users with structured procedures for problem-solving.	Some documents which the Division has developed or sponsored potentially serve this function, e.g., MDTA E&D Findings Number 5, 1969, and the Job Coaching Manuals produced by outside contractors (a good example is the Gordon-Erfurt Coaching Manual, 1971). Production of similar documents is being encouraged by the Division. A "how-to-do-it" handbook was developed from the "Older Worker" study, and has been distributed to the various State Employment Service Offices. Occasionally, the Division of Policy Studies and Analysis in OPE develops implications, follow-up proposals, and programs from ORD reports and evaluation studies for policy-makers in the DOL.	In training the RU Specialists themselves, a staff member from the RSA Manpower Utilization Branch reported that they had tried to "capitalize on their own (the RUS's) learning, to help them identify what's going on, and to help them feed this information to each other." It is not certain whethe this strategy has been used to train other client groups. Some documents being developed in RUB-sponsored projects, e.g., the handbook being developed from the review of research in the area of psychiatric rehabilitation, may also serve this function.
1.20 User Need Awareness and Self Sensing	No activities are focused directly on this, nor is it part of the Division's defined mission. However, staff within ORD have cited cases where presentation of research results has "generated" interest and awareness within users, particularly among policy-makers. Involvement of users at the federal level in the development of the annual R&D plan may indirectly develop some awareness among these program administrators.	In another step to develop the R&D Strategy, a new "issue generation" procedure has been instituted. Each of the bureaus is allotted $200,000 to define their needs, objectives, and problems. Each bureau will organize a six-man team for this purpose, with a full time staff member from the Urban Institute assigned to each bureau to assist these teams. This process will encourage need awareness among users at the federal level. The RUS's and RUL's can also be viewed as catalysts who encourage self sensing among the state client group, given their links and consultative efforts within the states.
1.30 User Need Expression Articulation	This function appears to be done only indirectly within ORD through meetings with federal program people in the development of the annual R&D plan. It was stated that users' suggestions as to needs often were too short-sighted for planning two to three years in advance. Yet it appears that there has been no attempt to expand the ability of users to articulate their own needs, nor was there any office with this defined responsibility.	The major efforts in this area would include the previously-mentioned work of the RUS's and RUL's as catalysts for the state client group and also the creation of the "issue generation" teams in the bureaus.

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One MHSV staff member described the purpose of the research they sponsor as that of helping to develop knowledge about how to solve problems of the local mental health centers. Thus many of the projects, e.g., the goal attainment scaling procedure to assess achievements of local centers, involve the development of specific problem-solving tools. Manuals are sometimes developed by the project staffs.

The consultation activities of Branch staff also cover this area. One staff member noted that on such consultation trips, the center staff may cite a specific problem that they have, and the Branch consultant tries to find out *why* they have this problem and encourages and assists the center staff in studying and evaluating the problem.

The MHSV also has developed some "how to" manuals which focus on problem-solving procedures: a manual on how to use information sources; a manual on program evaluation; a manual on research utilization.

The program evaluation manual, plus several national and regional seminars and symposia, has been intended to promote need awareness.

Through some of the projects sponsored by the Branch, e.g., the program evaluation technique development, and through consultation efforts, need expression articulation may occur. One Branch staff member mentioned that the purpose of center visits may be an excuse for the center staff to get together and "talk up a storm" among themselves about their needs and problems. In such cases, the presence of the MHSV staff member may serve as a catalyst for the client's own need assessment and articulation.

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NCEC has supported one project to develop a manual, checklists, and training models for improving problem-solving and knowledge utilizing skills. Intended users of these materials are a broad strata of educational practitioners in state and local agencies who would be identified as innovators or change agents.

Although this activity lies far outside NCEC's formal mission, there is some stress in the extension agent system on dialogue with users to help users identify their own needs. There is also a current contract which is attempting to develop need sensing methods and instruments which users can self-administer.

In NCEC, there has been an extensive history of attempts to get user need sensing input through formal user need studies, special surveys of individual projects (e.g., file partitioning), and in the development of specific products. The QUERY negotiation process also involves users in defining their own needs. Every Targetted Communication project involves some kind of user need input.

As noted above, one of the objectives of the extension agent system is for the agents to enter into need assessment dialogue and problem definition activities with targetted populations.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
1.40 Developing User Interest, Skill, and Capacity for Seeking Out Useful Information and Openness to New Research and Development Findings and Ideas	No activities of the Division are focused directly on this function. However, the Division assignment to develop communications with the regional offices is hoped to allow the regional staff to know what information is available in ORD and how they can use it. One of the barriers commonly cited by ORD staff in developing this capacity for openness to new R&D is the feeling among potential users that they do not have enough money to put E&D into programs: "It's a good idea, but give us the money."	The ICD effort (with assistance from staff in SRS) to develop training materials that will enable clients to use the ICD clearinghouse in their own work may be building this kind of capacity. The manual to be developed from the abstracting and indexing contract for the SRS information system should also encourage growth of this capacity. Various projects, including the RUS's and RUL's, the Stout State, Wisconsin, project to develop a clearinghouse and generate issues, etc., will certainly build this capacity among project staff members, and it is assumed that the work of these project staffs will have some impact in developing this capacity in broader user groups, e.g., the state clients.
1.50 Developing in User a Capacity for Adaptation and Integration of Solutions	Again, there may be potential in USES regarding this function, since the State Employment Service Offices have training units. But such training is not now focused on this function due to lack of time and resources. Staff of the Division of R&D Utilization feel that they do not have primary responsibility for need processing and for determining the direction of the R&D program. Rather, the Division generally brings its knowledge of user needs to bear in relating users to products of the R&D program. ORD, as a whole, is responsible for need processing and the planning of future R&D programs, and this planning process has been described as a "collective responsibility."	In eight to ten "Operation Research" projects funded by RUB, lectures are conducted for state agencies on the topic of research operations; this activity is intended to promote research capacity building among state personnel. The RUL in the Jewish Vocational Service (JVS), Chicago, has been cited as an example of a user-researcher group which has been developing this capacity in themselves as well as promoting its development in its larger user group. The RUS's also actively encourage this capacity in their clientele through their efforts. Until the evaluation of the RUS's is complete, it will not be known how effectively the RUS's can build this capacity among users.

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Again, the manuals developed by the MHSV on how to use information sources and on how to plan for creative change may assist in the development of this capacity in users.	This is the core philosophy of the extension program which is planned. Agents are supposed to act as catalysts and get users started on the path to self-initiated resource acquisition. By making users familiar with Putting Research Into Educational Practice (PREP) and ERIC materials, agents open up to users a new avenue to problem-solving. There is not yet enough evidence from the pilot agent program to indicate whether such contacts will actually lead to user self-initiation in acquiring resources over time. Many of the motivations for change in the local school districts are not self-motivations, but rather come from sources outside of the school system itself, e.g., pressure from outside generated by students saying that they aren't getting a relevant education. Although these outside pressures for school improvements allow a climate in which R&D products can be marketed, they also act as inhibitors since there may be built-in resistance to change. The proposed change in validation efforts, having states nominate programs to be considered for validation, might provide local school systems with alternatives to present procedures and allow them to learn to look at information that is presently available before they start new programs.
One Branch effort which appears to focus on this activity would be the consultation of Branch staff with clients. This consultation holds much promise in developing this capacity among users. The manuals on research utilization stress, in actuality, how to foster organizational change. Also, several new projects, in planning stages, will test and demonstrate deliberate techniques of planned change.	Follow-up activity to help clients in both adoption and implementation of innovations is another aspect of the emerging extension system; "developmental assistance" is one important part of the extension agent role. As one respondent noted: "You have to process beyond the point at which you fulfill information requests with the printed page; you must help (practitioners to) explore ways they can use information, help interpret, and get people in for consultant help." Visitations and technical assistance sites also serve this function for specific solutions. A contract with Contemporary Research is designed to provide a turnkey capacity to foster the adoption and adaptation of eight Title III programs earlier identified as exemplary programs.

Function Set #2: NEED PROCESSING

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
2.10 Need Arousal The maximal D&U system should be able to stimulate complacent users to start feeling needs.	Need arousal is only done indirectly for the most part, although in one conscious strategy of "utilization by subversion" the Division attempts to develop new directions in the thinking of establishment professional groups by giving them special dissemination contracts. Users are also stimulated on a selective basis by products, demonstrations, discussions, and conferences at which the Division representatives are offering facts and solutions. The net effect on some users may, of course, be an awakening to their own needs.	There is no direct strategy to do this, although some Branch staff members felt that in-house written materials, e.g., development of their R&D Strategy, have served the purpose of "stimulating thought" among policy makers in the area of D&U itself. A different group of users is also stimulated through various means. Written products, e.g., the R&D Briefs, are intended to alert users at different levels to new ideas and research conclusions, which could lead to need arousal. Various conferences as well as RUS contacts with clients can also stimulate thinking and concern about needs. Another indirect source of need arousal are the central office mandates presented to various groups. For example, it was felt that need arousal occurred among the state agencies through the institution of new federal objectives. At the federal level, need arousal may occur among program people by means of the new procedure in which policy implications are presented to the bureaus and in which, in turn, the bureaus are held accountable for accepting or rejecting the conclusions and implications.
2.20 Need Sensing (Similar to 1.20)	No formal strategy has been developed within ORD for need sensing. Lack of a direct relationship with state employment services and other manpower services at the state and local level may be one reason for this--and a strong one. Various members of ORD undoubtedly use their links with users to sense needs on a micro-scale, although the feedback of this need sensing into the development of R&D plans is not formalized.	Need sensing may occur among the federal staff through their participation in the procedures established to develop the annual R&D strategies. The work of the RUS's and RUL's with the state client group is, again, intended to promote need sensing on the part of the state user group; yet the effectiveness of the RUS's and RUL's in promoting this capacity is not yet known.
2.30 Need Definition and Redefinition The maximal system has an evolving definition of the need domains of users which includes present and future, substance and process, explicit and inferred.	For the most part, those in authority above the Division are responsible for anticipating need domains of the clients. Such definitions change frequently, reflecting the interests of the country. Various sources of obtaining definitions of need were cited: some notions of need domains are developed by special in-house committees, e.g., the Manpower Administration "study group" which	Traditionally, the direction of research toward general areas of need had been influenced by researchers. However, definition of need domains has become more formalized, with yearly objectives decided in-house and with more and more input on needs and priorities from policy makers within SRS and HEW. "Issue generating" teams in the bureaus define need domains as well as problem

NIMH Mental Health Services Development Branch

The mechanism available to the Mental Health Services Development Branch (MHSV) that would allow for need arousal is the consultation services that staff provide to community mental health centers and other mental health personnel. One MHSV staff member stated that people must be "helped" to know what they need: "you move people along by building on the information that they (clients) give you; make them curious." This consultation would indeed appear to be a potential mechanism for need arousal; however, it is not certain whether this strategy of consultation is used by all Branch staff or even how much staff time is available for such consultation (staff members mentioned other pressing duties which cut down on time for such visits).

Some non-Branch respondents felt that need arousal occurred to some degree among users other than mental health personnel. For example, pamphlets, use of television advertisements, etc., were mentioned as methods for need arousal for the general public, whereas conferences, workshops, and even the review panel experience were suggested as means for stimulating thought for researchers.

In a study that is just beginning, the American Institute of Research is going to canvass community mental health centers to obtain the centers' definitions of their own problems. There are no other systematic activities focused directly on need sensing, despite concepts and techniques that have been published by MHSV.

Traditionally, NIMH research programs have operated under a "free enterprise system," with researchers spontaneously bringing in ideas and applications. The direction and defined need domains of NIMH research programs have been heavily influenced by researchers through the use of "peer review" panels. Each research program in NIMH has at least one such review panel (there are over 40 panels in

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Need arousal for policy makers on the area of D&U is accomplished by keeping key people in OE well-informed of the services and products NCEC is delivering. Presentations at OE-wide seminars on the topics of dissemination and the Copyright Program have increased the number of requests for information services as have such presentations to non-OE groups. Visits to state-level staff members are utilized as opportunities to raise the priority level of dissemination by informing them of what NCEC has to offer in terms of helping the state agencies. Need arousal can also occur through Clearinghouse linkages to professional organizations.

BESE is conducting an Education Innovation Fair whereby state people working in Bureau programs are invited to review their programs through "Awareness Sessions" and "Adoption Clinics." The objectives of the Fair include stimulating the states to hold their own Fairs both on a regional and state basis, encouraging traveling seminars for demonstrators to take their projects to locals, and encouraging interchange among people.

As previously noted, one current contract (Stanford University) is devoted to developing methodologies for user information need sensing and will provide data to NCEC on representative needs from national samples of users in various practitioner categories.

The Bureau of Adult Vocational-Technical Education has supported the development of a number of "research coordinating units" (RCU) across the country to identify research priorities in the states and set priorities for R&D in their state plans. They determine these needs in various ways, such as having advisory councils set up to advise them on policies and priorities for research.

The definition and redefinition of needs is strongly influenced by the priority setting of the OE top echelon. Political changes at that level often bring new leaders with their own concepts and priorities. For example, the shift in OE to "getting into the classrooms" has produced a shift in the focus of ERIC from serving the researcher-scholar community to serving the practitioner-

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
	defined the area of needs resulting in the Work Sample Study project. The National Manpower Policy Task Force is contracted to sense general areas of need, and the National Manpower Advisory Committee has a Research Subcommittee which suggests priority areas for research. In-house policy makers, e.g., the committee composed of the Assistant Secretaries and Under Secretary of Labor and also staff of ASPER, are involved in priority determination.	areas for research. Although the definition of needs may change somewhat from year to year, most staff seem very aware of the defined areas of need.
2.40 Quantitative Needs Assessment The maximal system has a continuing workable procedure for user needs assessment both in quantitative and qualitative terms.	There is no formal or regular quantitative needs assessment procedure, but thought is given to the process. Means of involving the user in the project, including obtaining users' comments on proposals and meeting with users at the federal level, were considered procedures to assess users' needs. Some indication of needs arises from program statistics, evaluation reports, and also from suggestions of the researchers. "Anticipation" of policy concerns of DOL policy-makers was cited as a means of need assessment, as well as "idea stimulation" (e.g., the identification of problems not dealt with by existing legislation) among staff of ORD. Although the Division staff and	A management procedure which has been used for three years by SRS provides for a more formal assessment of program needs at the bureau and regional levels. In the development of the annual R&D Strategy, bureaus and regions provide various inputs: the bureaus define their goals and objectives, identifying knowledge gaps around each objective; specific research proposals are then designed to fill the identified gaps by "teams" (including an ORD staff member, the bureau heads, and possibly a staff member from a regional office); after review of proposals by ORD and perhaps higher officials, the refined strategy goes back to the bureau for their further comments.

NIMH) composed of outside, established researchers and professional experts in the particular area of concern. These panels review all of the grant applications of the research programs and make decisions as to project funding. Subsequently, the National Advisory Mental Health Council reviews all decisions made by the panels; thus, researchers have had considerable decision-making authority in influencing the direction of research.

However, there have been some changes noted in portions of the Institute. The MHSV noted a significant change from their previous "laissez-faire" attitude; a staff member estimated that by Fiscal Year 1973, over 90% of the Branch grants would be "collaborative," i.e., selected with input from Branch staff as well as from the review panel.

Recently, on an Institute-wide level, priority topics of the agency have been listed: topics such as the children's mental health area, integration of services, etc. Plans for the letting of contracts for evaluations administered by the OPPE also were recently designed to correspond to NIMH and HEW-level operational goals. Some of the problem-oriented Centers in the Division of Special Mental Health Programs, e.g., the Center for Studies of Crime and Delinquency, have identified critical priority areas for research and program emphases which will be their major responsibilities. Yet, as one moves into the less applied research programs, respondents indicate that the "free enterprise system" still exists, with less attention being paid to defining need domains. As one respondent from a basic research program said, "we don't put any priority on any particular kind of new knowledge."

One of the major phases of the MHSV's R&D mission has been defined as the "evaluation of needs, gaps, and problems in the delivery of mental health services." Thus, need assessment is considered to be an important Branch activity and various ways were cited to get at user needs. Researchers themselves have provided input on needs through a number of means: the peer review panel provides input on needs; in the children's program area of the Branch, a "cadre" of NIMH experts in this area has been formed to provide input on program needs. Branch staff have made use of their consultative site visits to mental health centers, program statistics, and even initial and continuation grant applica-

decision maker community. One informant outside NCEC noted that the Commissioner has strong influence in directing needs, and added that the only impact his Bureau has had on the Commissioner was when the Bureau was asked to cite the states' priorities; these "priorities" were almost like "fashions" or "fads." Concern in the Commissioner's Office for the Bureaus to establish a closer liaison and feedback relationship to the educational community has prompted thought in that Office toward the development of a committee of college presidents and knowledgeable people to discuss OE priorities.

Resource allocation decisions are made at the Deputy Commissioner level, with the Deputies being given a ceiling budget for a five-year plan and the responsibility for distributing the budget among the programs under them. They do get some broad external guidance from the HEW level, the White House, and Congress, and internal guidance from the OE philosophy of education.

The previously mentioned user need methodology study may provide the basis for continuing quantitative needs assessment, and the development of a need "sensing network." Otherwise, user needs are determined by proposals that come in, e.g., Targetted Communication Project proposals; when a proposer picks a problem area, he has to prove that it is a problem and that there is knowledge to be applied to the problem.

The dissemination representatives in the state agencies hold meetings at least three times a year to give feedback to NCEC on their needs. One of the activities in the extension agent system is for the

Maximal D&U System

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other ORD staff maintain informal contact with program people at the federal level, this contact has not served as a direct source of input into R&D planning.

It was generally agreed that suggestions as to needs from users tended to be pedestrian, resulting in "laundry lists of needs." Moreover, ORD had to be thinking two to three years ahead of the here-and-now time frame of the practitioner. However, it was admitted that it is pretty much of a "guessing process" and that ORD probably didn't do a good job of touching all bases this way, particularly since many of the informal contacts and users' inputs are restricted to users at the federal level.

OPE, in managing the Labor Market Information Program, has determined users' needs through the "wise judgment" of people who work in the program bureaus. However, there are plans to develop a more formal design to elicit users' needs, and this will be proposed as part of the FY72-FY75 budget.

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The roles of the various members on these "teams" are being defined for each of 13 stages in this process (including a "utilization" stage). "R&D Specialists" in the regional offices are expected to have input into this planning process and to participate on relevant "teams." Some program people felt there were still difficulties with this system for a variety of reasons: It was felt by some that the bureaus do not yet have a logical goal structure; input of local and state needs is not systematized; some felt that need determination was still politically based to some extent since competing demands make rational decisions difficult.

RUB has informally attempted to determine needs and interests of user groups in various ways. In order to develop a mailing list to send reports to the staff for their comments and suggestions, the Branch had at one time inventoried staff in the Rehabilitation Services Administration (RSA) to find out what research areas they were interested in. Input on needs is also obtained from RUB's in-house Advisory Committee. A major potential source of input on state and local needs is represented by the 9 RU Specialists.

tions of centers as sources of need assessment. More formal need assessment efforts have been undertaken by the Branch through project funding: a project recently has been initiated which is designed, in part, to investigate ways of monitoring needs for new knowledge and of screening for it; one phase of another project is designed to survey the problems of community mental health centers, a later stage will look at solutions initiated by other centers. Branch staff, as well as staff of other research units, also have the responsibility of keeping abreast of knowledge in their own areas of expertise in order to identify "gaps" in the knowledge base; however, this function has been performed with unequal success given the indication of lack of time to keep up with such reading.

Staff interviewed outside of the Branch indicated that there was more reliance on researchers in obtaining ideas about specific research needs. Peer review panels are common to all of the research Divisions. Conferences were a common technique cited for use in the research program of the Division of Narcotic Addiction and Drug Abuse. To obtain input about needs from Division personnel, staff from the Offices solicit need suggestions from these program people themselves. For example, the OPPE solicits input from Division and Regional Office staff in developing its evaluation contract plans; solicitation is performed through meetings as well as through requests for reports from each Division. In undertaking the development of various products, the National Clearinghouse for Mental Health Information in the Office of Communications also solicits Division-level need inputs through personal contacts and meetings.

There is no indication that such need assessment efforts and their results are relayed from one part of the Institute to other parts.

agencies to enter into need assessment and problem definition activities of the clients in their assigned target populations. The agents will work closely with people at the local level in their areas of need in addition to helping the local educators define their needs. The agents will be asked to summarize the kinds of questions being asked and the kinds of people asking questions, and to feed this information back to developers in the Labs and R&D centers. No such linkage exists as yet, however.

Within the Division of Communication Systems of NCEC, one respondent felt that although it was important to get user need inputs in developing products and an information system for practitioners, they were not getting this input presently. He didn't think that they were getting the right kind of inputs or suggestions that would be helpful in covering the right kind of literature and developing the right kind of products and system. Periodically, at various meetings and conferences, they get "hints" of suggestions and criticism, but these hints were felt to come from individuals who do not represent the locals they are trying to reach. ERIC staff hope to tie in closely with the extension agent system since the input from the agents on the needs of practitioners may enable them to develop more relevant plans of action.

A file partition study in ERIC is being conducted by the Systems Development Corporation to evaluate user needs and to develop alternatives to the present file partitions so that the files can be divided up in a way that will be more useful to practitioners. ERIC staff members occasionally make site visits to some of the local and state information centers to find out what some of the local problems are; however, as the information centers are just getting started, people generally ask what ERIC has that the centers can use rather than telling the ERIC staff what they need.

The Educational Reference Center (ERC) contracted a study on QUERY* users; however, it was felt that there has been no clear payoff from this study as the contractor did not supply results on who uses the system, what user problems are, and how the system can be improved. The Educational Materials Center,

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*A software program that allows for batch searching.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
2.50 Transmitting User Needs to Policy Makers	Various ORD and OPE staff prepare papers and budget documents which may be a source of linkage to policy-makers. Letters are also sent from ASPER to ORD level people in order to get information from the staff. There was some difficulty expressed among ORD staff in obtaining information about policy needs and issues of policy-makers. ORD staff view OPE and ASPER as additional channels for transmission to policy-makers, although such channels have not been formalized. A staff member of the Division has been assigned to improve links with OPE, which could result in clearer transmission of policy needs.	Although not the direct responsibility of RUB, bureau needs are transmitted by means of the yearly R&D Strategy to various policy makers, including the Office of the Secretary and the National Advisory Council for Vocational Rehabilitation. Through their reactions and recommendations at the time of these reviews, the agency also obtains input as to the perceived needs of such policy makers.

Although no unit in NIMH has sole responsibility for this transmission to policy makers, there was some evidence that transmissions do occur. Two means of transmission indicated include the use of informal, in-house advisory committees, composed of professionals from various units in NIMH, and the use of outside groups of researchers. An example of the former is the ad hoc committee formed in NIMH to review the area of children's mental health. An example of the latter is the case in which a group of outside researchers was convened about two years ago to produce a report on the effects of television violence on children; in this report, the researchers were directed to determine what research had been done in this area as well as what research needed to be done. It was reported that individuals in some of the Offices, e.g., OPPE, occasionally are requested to prepare brief reports to Congress and other policy makers on research needs.

located in the lobby of the OE building, is an educational library that places emphasis on exhibits of OE priorities. A needs assessment study of visitors to the Center has been contracted to the Clearinghouse on Library Science. The contract is designed to test user reactions to the displays and to assess the needs of the display visitors.

In the future, BESE staff will be asking about needs at the student level (e.g., what are their problems, their reading levels) rather than at the level of the school department where needs are discussed in terms of how many new buildings or teachers are needed. It is sometimes asserted that the responsibility for determining user needs belongs to the states: "The only thing we do in this regard is to influence the states to define their own needs." Determining the needs of the states themselves was not felt to be the Bureau's business either, but rather the job of NCEC since they provide the information in storage systems. The respondent felt that NCEC did this needs assessment by "osmosis" at the present time. In the Division of State Agency Cooperation of BESE, user needs are determined through the state management review process (SMR) "because their client group is so small, they can assess needs on a person basis; they come to us, we call, etc."

At the most general policy level, the input of needs in planning for NCEC is on the lines of building strategies. One respondent felt that it was, "what kinds of things are going to click with HEW planners and OMB." By attending various meetings, staff can "sense" whether there is adamant opposition, apathy, or approval for an idea.

There have been meetings with policy people to get help on specific programs, and there is a system whereby priority areas are identified. However, it was felt that an adequate mechanism for need input to policy makers was lacking. The information that the extension agents will be collecting was not felt to be the kind of information on needs that could be sent to policy makers.

At the Deputy Commissioner's level in the Bureau of Higher Education, monthly meetings are held with the major educational associations to discuss the problems and concerns of the participants.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
2.60 Transmitting User Needs to the R&D Community The maximal system has a means of transmitting need messages from users to researchers and developers.	Many ORD research projects are funded because they fit fairly specific operational or policy needs of the Manpower Administration. However, the desires and needs of prestigious researchers historically have been a major influence on the direction of the research program. Nevertheless, by encouraging face-to-face encounters of researchers and their various practice and policy audiences, the ORD staff promote the communication of needs as well as solutions. A good example is the "New Manpower Researchers" conference sponsored by DOL which enables new researchers to learn the priorities and needs of the agency.	The increase in in-house directed research specifications with greater use of RFP's may serve as a vehicle for transmission. Research proposals must also tie into one of the agency's objectives. A more formal procedure recently initiated is the annual "Bidder's Conference." Persons who are interested in SRS research are notified of and invited to this conference where the broad rubric of the annual R&D Strategy will be presented to those in attendance. The guidelines for contracts are also being published in the Congress Daily Journal.
2.70 Transformation of Need Priorities into Programs for Sponsoring R&D	Within ORD, the Division is only one contributor to this process, and major responsibility does not rest with ORD alone. Rather, this transformation appears to occur at different levels, with the different levels involved at various points in the process. At the level of Assistant Secretaries and Under Secretary of Labor, committee meetings are held to identify important fiscal issues for DOL. ASPER staff are also involved in priority determination and identification of areas of concern. The transformation itself appears to be done at the ORD level. Scanning of proposals for research projects is done by OPER staff to evaluate relevance of proposed projects to Manpower priorities and needs; scanning is also done by ORD and OPE	The primary mechanism through which needs are transformed into programs is the recently established Operational Planning System (described in 2.40) whereby bureau goals and objectives are identified and matched with needed areas of research suggested by the "teams." However, in spite of this mechanism some of the program people felt that the process has not yet become "rational"; instead, some viewed the present system as a political process, with various programs "lobbying" for the discretionary "pot" of money.

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One notable mechanism which has been used by the MHSV to transmit user needs to researchers has been the heavy investment of staff time in consultation with potential grant applicants. The Branch staff not only have assisted applicants in the development of proposals, but also have provided information regarding priority research areas of the Branch. One staff member, in fact, has conducted in-house studies on the primary decision determinants used by their review panel in selecting projects for funding results of such studies are relayed by the Branch staff to potential applicants.

Staff interviewed in other portions of NIMH also cited the use of consultation to relay their respective research priorities; however, the extent to which priorities are set by inside staff varies, and user needs in some instances means needs established by other researchers. One respondent indicated that most of the exchange that their staff has with those outside of NIMH regarding the needs of research programs comes from the researchers, and that the "researchers are the ones who benefit."

The "continuing objectives" of the MHSV correspond to the program areas which were developed through staff planning at the inception of the Branch in 1970. In turn, these program areas serve as the focal point to which research is directed and encouraged. There was some indication that the operationalization of need priorities into R&D programs is not as specific in other research units of NIMH. Although some units, such as Centers in the Division of Special Mental Health Programs, have attempted to define general priority or program areas around which to build their research and training efforts, the transformation from need priorities into programs has not been made explicit.

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Although no formal means to link up the needs assessment of the states to other parts of OE such as NIE were cited, it was reported that NCEC is trying to build feedback to NIE based on need inputs from the extension agent system. As the extension agent would first look at the specific problems of the client and then bring the information to him, it is hoped that this system will allow for feedback to the R&D community on the research information that is received by the client. Additionally, the Renewal Sites project includes plans to work closely with NIE on a feedback loop in its future operations. However, one non-NCEC respondent felt that with the new legislation, Congressional intent was to make sure that OE and NIE don't have a relationship. Hence, it may be that practitioner-user need input to researchers via OE will be even more problematic in the future.

Presently, there is no feedback from publishers to NCERD and other producers, although the Office of Program Planning and Evaluation (OPPE) has been requested to fund a project to look at comments and feedback from publishers.

In the Bureau of Higher Education, program guidelines are sent out on applications to any potential applicant and, at that time, the Bureau indicates their priorities. In the Applied Research Branch of NCERD, little stimulation of research is done due to lack of funds, and the fact that their research program is an unsolicited one.

In the Management by Objectives (MBO) procedure, specific program objectives are stated at the beginning of each year and are put into effect through an operational plan; this plan is then monitored throughout the year. The level of monitoring depends upon the priority of the program within OE and HEW. For example, working with the disadvantaged is an OE priority; therefore, Bureaus report their achievements in this area and these reports are consolidated at the Commissioner's level, which in turn reports to HEW. One non-NCEC respondent felt that MBO hindered innovativeness in OE in that units will set down objectives that they can meet: "If they developed objectives

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
	staff. However, it is not clear how the various inputs are coordinated and systematized in this transformation. There is probably room for confusion and error.	
2.80 Transformation of Needs into Problem Statements and Researchable Questions The maximal system has a capability of defining and redefining needs as solvable problems (diagnosis) and of setting achievable objectives for change.	Again, major responsibility for this lies elsewhere in ORD. The staff at the ORD level develop both one-year plans and longer-term plans. However, priorities and needs are operationalized and developed into specifics in the yearly R&D plan. Those Divisions responsible for R&D programs within ORD also have some input in operationalizing the needs. There were difficulties expressed in developing the one-year plans in specifics due to "unknown variables," e.g., timing of contracts and getting researchers to undertake the desired projects. Thus, occasionally the decisions as to final funding are made on the basis of which proposals have been developed into contracts, i.e., on a "first come, first serve" basis, which may "skew" the R&D program to some extent.	(Same applies as for 2.70.)

NIMH Mental Health Services Development Branch	*OE National Center for Educational Communication*
	that were difficult to achieve and were not achieved, it would mean the axe." In contrast, NCEC staff members felt that the MBO procedure was both a very effective tool for planning and a framework for need sensing input. In planning for particular activities, e.g., what targetted communications, Clearinghouse reviews, or clusters of projects to sponsor, NCEC draws on policy statements of OE and HEW. These priorities are supposed to be based on a "total, national view" of the problems and issues. In NCEC, each of the projects that the various Branches work with has specified objectives; money is given to a project with a specific end in mind. The Divisions are "mission-oriented," so there are very few unsolicited projects that they fund. In each Targetted Communication proposal that is funded, there is a requirement that the researcher must have input from the audience for which the project is prepared; this input has to be in the design of the project to assure that the project will meet the needs of the audience that the proposer selects.
Based on the R&D program areas established in MHSV, staff members have the responsibility of "stimulating" research in their particular area. However, the influence of the Branch staff on the development of specific research problems to be studied is indirect, involving collaboration between the potential researcher, the staff, and the review panel which makes the final decision about project design.	NCEC has no special process for doing this apart from its general program planning efforts.

Function Set #3:
SOLUTION BUILDING

Maximal D&U System

The maximal D&U system leaves most solution building activities to other agencies with three exceptions:

3.10 It Influences R&D to be More Relevant to User Needs

N.A. Division of R&D Utilization

Before a project is funded, relevancy is stressed in two ways: 1) ORD sends proposals to various people for review, including Division staff, other ORD staff and outsiders; 2) increasing use is being made of the Request for Proposal (RFP) procedure, in which proposed R&D will fit more closely into operationalized needs. It was felt that relating projects to real needs is a part of the definition of "good" R&D, and that project officers generally do "prod" contractors to do so.

After it is determined that a project will be funded in ORD, the Division does raise the questions from the beginning of what are the potential audiences and the utilization possibilities of projects. This is done primarily through the "buddy system" for a growing number of projects, with project officers and sometimes users involved in determining what the users will want from the project. Meetings between researchers and users and staff are encouraged also. The Division decides when final reports should be printed in large quantities; since this may be important to the researchers, the selectivity of the Division could indirectly influence R&D.

SRS Research Utilization Branch

RUB has developed "instructions" for grantees to include utilization requirements in their research proposals. New forms developed by RUB are now in use that require the researcher to include in his proposal the idea that there will be an expected product or products as well as defining specific users for such products. A form including RU requirements for continuation requests has also been instituted. Heretofore RUB's influence had existed only at the later stages of projects, i.e., in report writing, etc. A plan still exists to have RUB review all bids on RFP's coming out of ORD, but with the limited number of staff to carry out this task, this plan has not yet become operational.

In the larger organization, there has been a trend toward a more in-house directed research program, with the agency "calling the shots." This move has been intended to make research more relevant to program needs, particularly since bureaus are to be included in the execution of projects in a number of ways: in defining issues and problems that require research; in developing the guidelines for each project; in selecting the grantees; with bureau concurrence required to continue or terminate a project. There have been complaints that research information has not been relevant to the operating procedures of the bureaus. Originally the bureaus administered their own research programs.

The Office of the Secretary of HEW has also moved to make the R&D of SRS more relevant to user needs. Last year, funds were withheld for a time on an individual project basis because it was felt that research proposals in the overall R&D Strategy should fit better into specific objectives designated by those in the agency.

The Division of Aging has attempted to influence the direction of research produced. This Division has sponsored a project in which a manual was developed for researchers on how to make research more utilizable. A grant was also given to the Institute for Community Studies at Kansas City to conduct workshops and a conference for researchers in the area of gerontology with the purpose of "sensitizing" them to the necessity for utilization of their research.

NIMH Mental Health Services Development Branch

The second phase of the MHSV's R&D mission includes "the development of appropriate solutions through research." Thus Branch staff members, in consultation with potential applicants, encourage researchers to develop proposals that will fit into Branch (and Division) priorities. Even with this noted move in the Branch toward "collaborative" R&D with heavy input from staff in the pre-funding stage, final review rests with the outside review panel. However, staff noted that the review panel has cooperated by reviewing proposals in light of Branch priorities. In an earlier project sponsored by the Branch on factors influencing the success of research, a list of criteria (e.g., relevance, receptivity of researcher to consultation, etc.) was developed by which to judge the potential of research applications. These criteria are now used by the review panel in making funding decisions.

The MHSV has not attempted to influence other R&D programs in NIMH, although it was admitted that the monitoring that they do and the input that they obtain could have some relevance for the other applied research programs. The staff in the other units cited informal attempts (through consultation, discussions at conferences and meetings, etc.) to influence research, although there was some mention of difficulties in getting researchers to develop proposals in some areas where there are known needs. These difficulties may be due to the lack of researcher interest in the areas and the lack of "researchability" of the problem.

OE National Center for Educational Communication

In NCEC, the project officers are supposed to provide developmental assistance to the projects. The close contact with contractors and grantees in terms of monitoring goes beyond insuring the compliance of projects with the objectives stated in the grant documents and includes providing "technical advice" to project directors. Program work, i.e., the development of new program areas, was cited as an activity by several respondents. The stages involved in this process include discussions with other Branch staff, program descriptions and specifications, RFP's for contracts, outside reviews of proposals, selection of projects by staff, and negotiations with proposers to make projects more likely to be successful.

One of the objectives of the extension agent system is that as the extension agents work to install innovations produced by OE or OE-funded projects, a feedback loop will be established between the installing agency and the producing agency. This mechanism, if it can be established, should allow the agents and the retrieval centers to feed back information about the holes in their knowledge base.

Although NCEC has no formal influence over the bulk of the OE R&D program (until 1972 in NCERD, now in NIE), some respondents felt that there was a "close and very productive relationship" because of the origins of NCEC within the Bureau of Research and the resulting historical ties among the two staffs.

ERIC and its Clearinghouses were seen as having some influence on the research of OE through their syntheses and reviews and even through their selection process for reports to include in ERIC; however, it was felt that this influence was over a long time period. One respondent felt that NCEC should not be overinvolved in the research program (development, setting priorities, evaluation, etc.) because they were experts in communication and D&U, not in the substantive areas of research. Instead, according to this respondent, NCEC should take the products of research and decide the best way to disseminate them and which audiences could use the products.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
3.20 It Influences R&D Output to be More Disseminable and Usable by Key Target Groups	The Division has much influence in this activity through a number of means. Sometimes Division staff are asked to review research proposals on the basis of their "accumulated base of knowledge on D&U." This is accomplished through the "buddy system" for a number of projects: the Division staff make suggestions as to how drafts of reports should be written, intervene in discussion of drafts for final reports, and discuss with project officers what products should be developed out of the projects as well as how the products should be disseminated. A good example of developing a project into a usable tool can be cited: The University of Houston wrote a detailed report of its experiences in developing a Center in the University to serve community manpower needs; at the prodding of Division staff, they distilled the pertinent experiences and produced "guidelines" for other universities.	RUB has had some influence on the R&D output, particularly on that of the rehabilitation research program. This influence has been largely through the guidelines they have developed for final report writing. Requirements in these guidelines include items such as a short summary for each report, distribution to each of the state agencies, etc. Presently an RUB staff member is heading a Task Force which will revise the Guide in an attempt to develop requirements for all SRS R&D programs. There is also RU input in the development of continuation requests, since written instructions require that researchers must address themselves to RU.

NIMH Mental Health Services Development Branch

The MHSV has employed several means to influence their R&D output to be more usable. In their consultation work with researchers in the pre-funding stage, Branch staff stress the importance of utilizable results, especially since the Branch has relied heavily on researchers to participate in D&U activities. The Branch also has begun to use D&U supplements for some grants to assure disseminability of projects; supplements are used for such things as conferences and "action consultant" services. One other way to stress to researchers the importance of such results has been the monitoring activities conducted by the Branch: upon completion of each project, the quality of incoming reports is measured in terms of cogency, clarity, and usefulness; researchers are asked to cite what persons or groups have begun using project results as well as how many disseminations have occurred. Other research units have expressed interest in the Branch's monitoring techniques, although it is not known whether these other units have adopted this method. The criteria used by the review panel in evaluating proposals also include items which would influence the utility of projects: innovativeness, coherence, awareness of the need for dissemination, and utilization planning.

In other research units within NIMH there was an indication of varying degrees of interest in making research usable. In the Center for Studies of Crime and Delinquency, administrative D&U supplements have been used in a few cases to encourage the researcher to produce usable results. On the other hand, some units which sponsor more basic research felt that this kind of influence would not be possible, since prediction of applicability is difficult in basic types of research which are funded.

OE National Center for Educational Communication

Even in unsolicited research programs within OE, there are guidelines developed that researchers must incorporate into their proposals; these guidelines include questions on the users, the end product, and the significance of the project. However, these guidelines were not felt to be stressed as much as they should be and were not specific for particular research programs.

One of the stages in the development of new program areas involves negotiation with the proposer to make the project more likely to be successful. Contacts with researchers may occur on particular projects in terms of monitoring and reviewing duties. For example, NCEC staff monitored an Educational Testing Service (ETS) project that was designed to evaluate products developed by the Labs and R&D centers and to recommend which ones would be most effective.

One non-NCEC staff person cited as the biggest shift in OE the increasing importance of quantification and documentation (and success) of programs and also an increased importance of program planning (MBO).

The Bureau for the Education of the Handicapped is planning a contract for the development of an institution called a "National Center" which will look at all products developed under the auspices of the Bureau. The Center will decide which products should get a "push."

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
3.30 It Conducts R&D on the D&U Process	The Division has initiated various types of projects: attempts to target communication for special audiences, E&D to explore new programs, work on conceptualizing the knowledge flow process, (e.g., through conducting conferences involving outside experts in the field), and projects to repackage information. In general, it appears that more of the R&D initiated by the Division attempts to actually improve dissemination and use of knowledge rather than to investigate the D&U process itself. Exceptions include the present exploratory case studies, a literature search on utilization theory being undertaken in the Manpower Science Services project, and the 1966 Glaser study which was intended to develop a "doctrine" of utilization for the Manpower Administration.	Most projects sponsored by RUB to date have been designed to produce products, conferences, or new roles in the communication network (the RU Specialists). However, an early study done in 1964 attempted to investigate methods to facilitate the utilization of rehabilitation research results. An evaluation study of the RU Specialists is planned which will investigate a portion of this D&U process. Other projects have been proposed by RUB which are designed to improve the process of dissemination and utilization.

NIMH Mental Health Services Development Branch

About 7% - 8% of the Branch's funds have been used for projects on the process of D&U. Such projects have included studies on how to bring about program change, how to make research more utilizable, and how practitioners utilize information. These projects have had effects on the operation of the Branch. For example, the criteria used by the review panel were developed in a Branch funded project. The behavioral change model which the Branch Chief has recently adopted for use came from earlier work sponsored by the Branch. Projects underway now are designed to enhance the Branch's R&D mission. One project begun recently includes several phases which will test various products and techniques to improve D&U activities and will have a training phase in which Branch staff will develop consultation skills for promoting change. The projects which are designed to produce "products" usually are funded by contract money or by administrative supplements. There has been some difficulty, however, in obtaining funds for research on the D&U process as well as for D&U projects. Instead, most of the Branch's funds are used for research on substantive areas, e.g., new services to schizophrenics. Reasons for this allocation include the fact that research on service problems is more likely to have visible impact and the desire for immediacy of returns on the part of those who make funding decisions.

A few evaluation contracts have been directed to look at portions of the D&U process. A contract administered jointly by the OPPE and the Division of Extramural Research is designed to trace the applications of basic research findings over a 30 year period. It is hoped that this tracer study will provide some insight into the process of "bridging the gap" between basic and applied research efforts. Although the Office of Communications contains some experts in the area of communication and information science, no research on communication has been sponsored by this unit. However, the Clearinghouse in this Office is considering the possibility of funding this type of "process" research beyond the products they are having developed presently.

OE National Center for Educational Communication

Applied R&D in the area of D&U is one of the five specified objectives of NCEC. NCEC both produces and uses research on D&U in developing their own programs. To survey the D&U knowledge base, they have used ERIC, the ERC DIALOG system, consultants, ideas derived from research, commissioned studies, etc. There are about 120 documents in the ERIC file that relate directly to the concept of linkage in D&U programs or on extension agents. Much of this material has been generated from NCEC-sponsored projects.

Within NCEC, support of applied R&D in the field of dissemination is the designated mission of the Extension Support Branch. Research on communication methods is designed to find out "what goes on out there" regarding innovation and adoption and to improve dissemination practices. Examples of activities of this type include a study in which types of federally-produced vocational education "packages" are compared for possible dissemination to school systems, a project which deals with some review and reconceptualization of dissemination, and a project that is viewing innovations from the superintendent's point of view (in a sense, this latter project will test the linkage model and other models).

Function Set #4:
SOLUTION PROCESSING

Maximal D&U System

4.10 Knowledge Transformations

The raw R&D product is simply unpalatable for most users. It is too long and wordy, filled with statistics, written in the specialized language of the researcher's field, and often addressed to the concerns of other researchers. The maximal D&U system can take the raw product and transform it in innumerable ways, condensing, repackaging, simplifying, summarizing, combining and so forth. To some extent, reaching different audiences requires different types of transformation.

An important type of transformation is the transfer of a message from one medium to another. In the maximal D&U system, messages are constantly being transferred from writing to speaking (via reading) and from speaking to writing (via documentation and transcribing). Most successful transfers from source to user are, in fact, transformations as well as transmissions because in the process of listening, reading, remembering, and incorporating new knowledge into his behavior, the user inevitably makes changes in what he receives, adding from his own experience, from other things read or heard, simplifying, levelling, sharpening, etc.

More specifically, the maximal D&U system must be able to make the following types of transformations:

N.A. Division of R&D Utilization

Much of the energy of the Division's staff goes into transformation activities of one sort or another and it is probably in this area that the agency is strongest. Much of the transformation work is carried on within the agency rather than being contracted to outside specialists.

SRS Research Utilization Branch

RUB has done much to transform R&D reports into readable and usable products although the philosophy of the Branch Chief has been that some of these efforts should be the responsibility of researchers, R&D Centers, and Research Institutes themselves. RUB's ideal role would be more that of a catalyst for transformations rather than a transformer.

NIMH Mental Health Services Development Branch

The MHSV has not concentrated its resources in this area of activities.* Traditionally, the Branch has operated under the assumption that researchers should be the primary proponents of D&U activities and the Branch has encouraged researchers in this area. One of the reasons for this assumption has been the lack of resources for this type of activity: only a small contract budget is available to have products developed. Hence, there is a trade-off in grant allocations between research on substantive problems and research to improve D&U activities.

Other research units within NIMH have cited similar problems in funding various transformation activities, with the same type of trade-off in existence. As one outside respondent stated, "There's a lot of lip service paid to D&U, but when it comes down to doing it, people aren't willing to pay for it."

The exception, however, is in the Offices, where both staff time and contracted work to outsiders are heavily invested in the area of transformations. The Clearinghouse in the Office of Communications, for example, has devoted most of its efforts to packaging and dissemination activities.

OE National Center for Educational Communication

The Dissemination Programs Branch of NCEC is concerned with the use of various media: printed materials, traveling exhibits that take information to people, and special kinds of workshops that focus on finding things out about innovations and better practices. One respondent said that in "pushing" educational innovations or products, they fund demonstrations, develop products, and train people to use products. In the Clearinghouses, ERIC has taken some measures to dictate the kinds of products to be produced; for example, the Clearinghouses have been instructed to decrease the number of bibliographies produced and to increase the number of other products. The Copyright Program of OE is unique to that agency in that no other federal agency has as comprehensive or as centralized a program. This uniqueness was attributed to the fact that OE supports the development of materials for a mass market in which a particular item might sell for $1000 or more.

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*The new MHSV magazine, Innovations, has been designed as a transformation device; however, it was not produced until several months following the data-gathering for this case study. A second magazine, Evaluation, has a similar purpose; it is being produced through grant funds.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
4.11 Production of Basic Written Material The most fundamental sort of transformation of concern to a D&U system is the transformation of raw data and experience into written products, e.g., research reports, case studies, histories, documentations, etc. The maximal D&U system should be able to take much of this for granted as "input" to its operations, but it also has to have the capability of retrieving and documenting important events such as demonstrations, conferences, and development project histories. The maximal D&U system should also have the capability of documenting its own history and its own activities.	Most research sponsored by ORD is contracted to outside researchers. Some ORD staff, particularly in the Research Division, are responsible for doing research from secondary sources, although ORD does not have the resources to undertake original research. Reports are required from all contracts and grants. The Division's various activities were at one time documented by an in-house historian, but this practice has lapsed. Informal memoranda on the Utilization Division's activities and plans are still prepared from time to time, and the earlier practice is being re-established.	The Division of Intramural Research in ORD has had the capability of doing in-house research, particularly in the area of social welfare. However, decrease in staff size has limited such research activity, with present emphasis on monitoring contracts to outsiders. Final reports, and in some cases progress reports, are required of all the R&D programs in ORD, although specifications vary. RUB itself is responsible for obtaining final reports of the rehabilitation research program, and this task requires almost full time attention by the Research Administrative Assistant. RUB's activities and development have been well documented and up-dated by one of the staff members, whose skills in documentation have been useful not only to insiders but also to those not so familiar with their activities.
4.12 Summarizing (including Abridging, Abstracting, Annotating) Summaries generally add greatly to the utility of documents for any audience. They key readers to important contents; they make the task of synthesis easier and they reduce the input load of busy users for whom all contents are not necessary or relevant. Summaries are normally far easier to transmit and to remember than total contents.	The Division routinely summarizes or contracts for summaries of all contract and grant reports. A significant amount of this is done in-house (e.g., the R&D Summaries and the annual projects book), some of the rest by authors, and some by contractors (e.g., Brookings contract for the WIN Conference). It appeared that management of this abstracting operation could be contracted to free up more internal staff time for other matters. Abstracts of reports are generally of a standard depth suitable for NTIS listing; all research reports are required to contain not only summaries but also conclusions and recommendations.	RUB is monitoring a contract which is designed to abstract and index all final reports completed up to the present--over 1,735 abstracts have been completed to date. Summaries of standard length are produced which are appropriate for NTIS listing, as well as 1,000 word summaries and 200 word abstracts which will go into the computerized information system being developed. Also, final reports are required to include a page of significant findings, an abstract, and an R&D Brief. The SRS Research volume produced by RUB contains an annotated list of all projects, both completed and on-going, sponsored by SRS. This volume will be updated annually.

NIMH Mental Health Services Development Branch

MHSV, aside from documenting and monitoring the use of its research projects, has various other means of recording and monitoring its activities. Staff have been encouraged to keep logs of contacts, requests, etc., as well as documenting site visits to centers, although the latter activity has met with unequal success since this documentation takes time. The Branch has adopted a goal attainment scaling technique (developed in one of their projects for local centers) by which to assess the Branch's actual progress toward its objectives as compared to expected (or average) progress and above average progress. Some of the Branch's projects have been designed to document "what's going on in the field" in mental health centers and in other types of mental health services, and this information will become a part of their knowledge base.

NIMH has various research units involved in intramural research. The whole Division of Intramural Research conducts in-house research in laboratory and clinical settings. The Division of MH Service Programs itself has a Branch, called the Mental Health Study Center, which conducts in-house research on mental health services.

Requirements for final reports vary across research programs in NIMH, ranging from the final progress reports required in parts of the Division of Extramural Research to the requirements of the MHSV which include a final report plus a summary and report of use of project results.

Most of this activity is contracted out by two of the Offices, and the summaries produced are not necessarily limited to those of research produced by NIMH. The National Clearinghouse for Mental Health Information (hereafter cal[illegible]he Clearinghouse) in the Office of Comm[illegible]cations is monitoring contracts for the abstracting of articles from 926 "high yield" journals produced in various countries as well as from 2600 journals of "lower yield." In addition, books, monographs, technical reports, workshop and conference proceedings, and symposia are abstracted under contract. Such abstracts are stored in their computerized information system. The output of the Clearing-

OE National Center for Educational Communication

Information in ERIC is primarily R&D based, although recently some innovative practices and programs have also been included. The information is derived from the fugitive literature searches of the Clearinghouses, the screening of 600 plus major education journals (Current Index to Journals in Education, CIJE), plus reports from various OE divisions and other agencies, including all research reports. They also monitor the collection of the National Technical Information Service (NTIS). It was felt that the ERIC files did not include the practice-oriented literature (research or otherwise) developed at the local level, nor is there complete coverage of state-developed materials. However, action is underway to increase these types of materials, e.g., a project to collect "promising educational practices." There was uncertainty expressed as to how much of the relevant information from other programs in OE was actually being sent to ERIC and then put into the system. Although they do have agreements with people in other programs, the organizations and people change, some programs in OE have copyright authority, and they are not certain of all the OE programs as they change rapidly. Other gaps cited in ERIC coverage include the areas of the arts, music, and humanities. Different reasons were cited for gaps in ERIC coverage of all sources: one NCEC respondent felt that the problem was not one of "philosophy," but a shortage of staff to arrange for input into ERIC and to monitor whether they are getting adequate input; another staff member felt that a definitive policy was lacking.

ERIC administers the Clearinghouse contracts (19) and about six other contracts which deal with collecting, selecting, cataloguing, and indexing of information to be put into their information system. The documents selected are indexed and abstracted by the Clearinghouse according to a closed vocabular controlled language. For each selected document, the Clearinghouses prepare a 200 word abstract. The knowledge base includes journals (CIJE) as well as reports.

Maximal D&U System

Therefore, the maximal D&U system summarizes or is able to require further summarization of all documents and to provide summaries of varying depths for the same document.

4.13 Collection and Synthesis

Another important type of transformation for all audiences is the gathering and reviewing of a number of studies from the knowledge base. This becomes more and more crucial as the volume of research reports and the size of the knowledge base increase. The maximal D&U system is able to call upon skilled writers and synthesizers to put together review papers and books on various topics as well as on the entire subject domain of the agency. These synthetic reviews are of prime importance to the researcher and to a lesser extent the policy maker, but they are also an important intermediate step to the more specialized transformations described below and they form an important access link to the research document base as a whole.

M.A. Division of R&D Utilization

From time to time attempts are made to compile compendia, reviews, and syntheses of a number of studies. A major effort of this sort was "Operation Retrieval"* which analyzed reports and records from 55 E&D projects in the youth field. Eight scholars (one of whom is a division chief in ORD) developed eight summary papers published as one compendium, Breakthrough for Disadvantaged Youth. This product is generally viewed as one of the "successes" of the Offices, but there is no regular pattern or routine for the production of similar reviews in other areas. It should be noted that Breakthrough is not a true synthesis of knowledge on a manpower topic because it restricts itself to E&D projects and ignores the larger knowledge base on manpower generated by research projects from ORD or elsewhere. Other examples of syntheses of in-house R&D subject areas include Ferman's Job Development for the Hard to Employ, a synthesis based on E&D projects in the areas of older workers, and a synthesis on Industrial Opportunity Centers.

SRS Research Utilization Branch

RUB has, from time to time, funded projects for reviews of the literature in specific areas. Major efforts of this type are undertaken by the RRI's in social welfare institutes which are established around core areas of concern. These units have responsibilities for collection and synthesis of data on a continual basis; some produce up to ten syntheses a year. Such reviews are then distributed in monograph form to about 4,500 users. The Regional Rehabilitation Research Institute (RRRI) at the University of Florida has been funded to develop a series of monographs which review areas of rehabilitation R&D. Two state-of-the-art reviews are underway in the areas of rubella and psychiatric rehabilitation. The coverage of research areas is by no means complete, and there is still a need for an annual review covering the other research program areas.

The Research Analysis and Utilization Branch (RAUB) originally performed the in-house function of reviewing and collating research on social welfare RAUB did not restrict itself to that research produced by SRS and used other available depositories to expand their coverage.

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*This project was begun before the formation in 1966 of a utilization unit in the Manpower Administration. Publication date was 1969.

house includes not only computer print-outs of citations and abstracts in response to individual requests, but also numerous publications: 1) abstract journals published periodically include Psychopharmacology Abstracts and Crime and Delinquency Abstracts; 2) the Schizophrenia Bulletin is published periodically; 3) the Mental Health Digest includes summaries of various works. Specialized one-time bibliographies (sometimes annotated) also are produced through the Clearinghouse by contract. Such products, including the periodicals, are often done in conjunction with the relevant Divisions and sometimes with staff from other agencies. For example, a contract for the production of a bibliography and abstracts on the Treatment of Alcoholism is underway and is being monitored collaboratively between the Clearinghouse and the Division of Alcohol Abuse and Alcoholism.

The Program Analysis Branch of OPPE has a contract to abstract all project reports produced through evaluation contracts. The MHSV requires that researchers produce summaries of project results, and these summaries are also placed in the Clearinghouse information system.

The MHSV has sponsored a few contracts designed to produce state-of-the-art papers around particular program areas that they have emphasized. For example, a contract that was recently completed produced a compendium on children's services in which the literature was reviewed over the last three years. Branch staff members are encouraged to keep up with the latest developments in their particular program area and occasionally, staff will develop state-of-the-art reviews in their area of expertise or have these done by contract.

However, collection and synthesis activities are common among other research units in NIMH as well as in the Offices. The Center for Studies of Crime and Delinquency has contracted to have eleven monographs done which review the literature around special areas of concern; yet one of the problems cited was the small amount of contract money available for this kind of product. Even in the more basic research areas, e.g., portions of the Division of Extramural Research, conferences and other workshops have been funded to provide a forum for integration and synthesis of research.

In their given areas, the ERIC Clearinghouses produce reviews, analyses and syntheses, monographs, bibliographies, and brochures. The Clearinghouses also use their files of requests to develop their own products, e.g., bibliographies based on the most requested information. Although some Clearinghouses publish their own material, many have developed arrangements with others to print the products free of charge. Other groups, including other federal agencies, have made arrangements with the Clearinghouses to acquire, select, and index specific subject areas for them related to education. They have had approximately $1.1 million in subcontracts and grants this year.

Considered to be at a "higher level" than the bibliographies, syntheses or state-of-the-art reviews also are created by the Clearinghouses. NCEC takes bids and issues RFP's for literature syntheses in certain problem areas and has funded several reviews, e.g., Havelock's PLANNING FOR INNOVATION, a comprehensive review of literature on dissemination and utilization. However, one respondent felt that in the past even these reviews have been oriented toward researchers. Crowell, Collier, and

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
	based on 18 E&D projects. However, the National Manpower Policy Task Force (NMPTF), under contract with ORD, has produced syntheses that extend beyond products of ORD, e.g., a recent survey done on studies available regarding status of women in work. A major purpose of the Task Force is to assess research in key areas and prepare reports on what is known and what more needs to be known. The Division is also sponsoring contracts for the development of three "state-of-the-art" papers in the areas of assessment instruments, corrections, and worker attitudes. *The Manpower Report of the President* (an ORD product) is close to being an annual compendium of manpower knowledge but does not usually attempt to review the research and development literature systematically (although this was done for the year 1969). There is still a clear place for an annual review of manpower research or research on specific manpower topics, although the syntheses of the NMPTF partially fulfill this function.	

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In the Program Analysis and Evaluation Branch of OPPE, several "science writers" are paid to develop syntheses and reviews of specific research areas supported by NIMH; output includes such reviews as Sleep and Dreams, Urban Mental Health, Biological Rhythms, and Rural Mental Health. This Branch is also responsible for an annual Program Report, produced over the last five years, which reviews major NIMH programmatic efforts including both research and service programs sponsored by NIMH. However, even with this effort, some staff members felt that more major reviews were necessary for adequate coverage of all of the areas supported by NIMH.

The Clearinghouse in the Office of Communications has contracted to have state-of-the art reviews produced which encompass more than just the research sponsored by NIMH. Some difficulties were cited, however, in developing good reviews, as there is always the possibility that the reviews will turn into a "series of abstracts joined together." Occasionally, staff in the Director's Office also are called upon to develop reviews of problem areas when the problem doesn't fit neatly into any one Division's research boundaries. For example, a review was requested by the White House on what was known about the behavioral consequences of home property ownership among those who have had little property, and the request was turned over to the Director's staff. The review that was produced was developed by bringing in a group of researchers who were knowledgeable in this area.

OE National Center for Educational Communication

McMillan, in cooperation with NCEC, has created numerous "spin-off" products such as the Cumulative Current Index to Journals In Education for 1966-1969 (another volume is being produced for 1969-1971), a bibliography on reading, the publication of the ERIC-produced bibliography for the President's Commission on Finance, and a Cumulative Index to ERIC. A separate cumulative index to ERIC was also done by Prentice-Hall.

There is a project in NCEC for setting up a program to collect information about promising educational practices on a national basis in collaboration with state agencies. Working through the dissemination representatives, staff and an outside contractor have put together a format for acquiring information. "Awareness Level" bulletins are put out by NCEC on such things as other models or selected projects (e.g., bulletins for some Right-to-Read projects which were done with Title I funds).

The Educational Materials Center staff of NCEC have developed bibliographies which they send, free of charge, to people on their mailing lists. The bibliographies are developed around areas of concern in OE and are not based on research reports, but rather are designed to tabulate an index and annotation of textbooks for elementary schools, juvenile literature, etc. The Center has tried to build up its system of exhibits which document exemplary programs. They have been requested by the Office of Public Affairs (OPA) to distribute two of their booklets of a general nature on career education and environmental education.

Yearly, the Bureau of Higher Education contracts a series of people to develop a publication on trends in post-secondary education. However, these state-of-the-art reviews have been done as a legislative requirement and are the only type of publication produced. Bureau staff try to utilize ERIC materials whenever possible.

Some things that ERIC used to do and that are missed were noted by one OE respondent outside NCEC, for example: when the monthly ERIC abstracts series Research in Education (RIE) was started, each issue contained a back section listing research projects started in the month. The input for this section was derived from an internal document, Current Project Index (CPI) and was no longer available when CPI was discontinued. In another such instance cited, Manpower Research, an inventory covering research sponsored by a number of agencies, was published and paid for by ERIC although it was a joint effort of the agencies. However, when OE "got tight on money, no one else paid for it, and it fell apart."

Maximal D&U System	*N.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
4.14 Tailoring The maximal D&U system is capable of tailoring important research products for its most salient audiences. Such activities as editing, rewriting (in the language of the receiver), reorganizing and reproducing may all be part of this process. Manuals, handbooks, and cook books based on research, but formatted and composed to be of direct utility to persons in various roles, fall into this category. The maximal D&U system has at least one annually updated manual for each of its prime user groups (excepting perhaps researchers).	The Division is currently very concerned about packaging, tailoring and targetting R&D findings to specific audiences.	The RUB presently spends much of its time in tailoring and targetting R&D findings to various audiences:
	a) For policy makers: the ORD director, as well as some staff in OPE, is particularly attuned to findings that might have implications at higher levels. Memos and policy statements are typical vehicles for such communication. Issue papers and other papers developed from research and other program information are sometimes developed by staff in OPE and in the Research Division of ORD. Recently the Assistant Secretary for Planning, Evaluation, and Research (ASPER) initiated a compendium of "Advance Research Briefs"; these are summaries targetted for policy relevance submitted to the Under Secretary.	a) For policy makers: RUB has produced several in-house documents which have relevance for policy makers. There is an on-going grant to produce a Handbook of Selected SRS R&D Products which will highlight those projects with special implications for policy makers and other audiences, and will be distributed to various levels. Other in-house activities, such as preparing support material for budget testimony and preparing the RUB portion of the R&D Strategy, also constitute policy-oriented tailoring. In developing such papers, RUB has scanned a broader universe of research than that produced within SRS particularly in the area of D&U. Recently, a 20 minute slide and tape presentation has been prepared for administrators within SRS and at other levels of government which describes the activities and mission of the RUB. Welfare in Review, a monthly journal which was produced by the Division of Intramural Research, contained research related articles; it was identified as reaching a small but important group of policy makers. However, this journal has been terminated and will be replaced by an SRS journal called Human Needs. It

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As evident in Section 4.13, numerous products have been developed in different Divisions and Offices which may have relevance for a number of different audiences. Yet many of these products appear to be organized around specific research or problem areas and not necessarily for specific user groups, although such products as reviews, abstracts, and bibliographies have evident benefits for researchers. However, there have been some products and other efforts designed with specific users in mind:

a) For policy makers: Staff in various research units of NIMH are occasionally called upon to prepare special reports in their particular area of expertise, quick analyses, and budget testimony, etc., to be relayed to policy makers. It was noted that MHSV staff can spend up to one-third of their time in answering such requests, and the Branch Chief, in particular, has been called upon to prepare special reports on D&U and their mission of R&D. However, some units spend a majority of their efforts in relaying information to policy makers. Results of the evaluation contracts administered by OPPE are relayed to a select group of policy makers at various levels by means of a written report along with an "executive summary" and face sheet which highlight the evaluation results. One of the major responsibilities of the staff of the Director of NIMH and those in OPPE has been to respond to requests for reports.

OE National Center for Educational Communication

Although it was felt that the field of education needs people who are able to glean the existing knowledge and its implications, e.g., state-of-the-art reviews, most people who attempt to do so were not considered to be the most capable, and the best minds in the field would be hard to buy. As it is difficult to get researchers to use the knowledge base that is available and to build on it, one respondent outside of NCEC has been thinking of giving researchers funded through his Branch about $5000 extra at the start of the project to require more sophisticated reviews before the proposals are accepted.

Although the client base of NCEC is intended to include the "entire spectrum of education," they provide various forms of information to different audiences. Both ERIC and ERC are used as tools to develop a general awareness of the area of D&U.

a) For policy makers: An effort is made to see that the poeple in levels above NCEC get copies of the service information and products NCEC is delivering, e.g., keeping PREP kits visible, feeding in new packets of information and new sets of exemplary programs. ERC's primary function is to act as a resource for OE and HEW staff in terms of reference work, searches, bibliographic materials, and other information services. A major effort of ERC is use of the DIALOG retrieval system to give rapid and complete access to the entire ERIC files in response to questions put in by policy makers.

b) For professional practitioners: a "Manpower Research Visibility" column is prepared for the American Vocational Journal under contract. The American Bar Association (ABA) has been contracted by the Division to develop a newsletter aimed at a carefully selected mailing list of about 3,000 (mostly lawyers, state legislators, and others involved in criminal justice); it will report ORD work dealing with employment barriers to offenders. ABA will also develop workshops of professional groups who are able to take action, and will repackage elements of an earlier ORD product.

Various Division staff members prepare materials, speeches, magazine articles, and displays for conventions, all of which could be viewed as tailoring for professionals. The Division has also encouraged project staff to appear at national conferences to report on their findings. The Manpower Magazine, developed by the MA Information Office, can also be seen as a semi-tailored communication tool; ORD projects supply about 1/3 of the contents.

Under contract with the Division, multi-disciplinary teams of graduate students at the University of Arizona are working under expert guidance to translate, package, synthesize, and tailor research projects (including dissertations) for use by specific audiences.

Through the "buddy system" or through their own contacts, the Division continually pushes for tailoring to specific audiences and usually these audiences are practitioners in Employment Services. Rewriting, translating, and special formatting of various documents are common tailoring procedures in the written medium. For example, staff took the products of two evaluation studies and eight E&D reports on household workers and, with the Office of Education, the Women's Bureau in DOL, and the American Home Economics Association, prepared a package for broad distribution through all these agencies. Conferences which bring together R&D project directors and operating program people are also a common device and can be seen as "tailoring" in the oral medium.

was not certain whether this journal would be tailored so as to have particular relevance for policy makers. The new journal may be directed to a more general audience including practitioners.

b) For professional practitioners: The R&D Brief Series, designed specifically for this group, has a wide coverage which is expanding over time. The Briefs are two-page summaries of selected projects and spell out implications for these users. SRS Research, the annotated listing, is also sent to a large number of practitioners. In-house experimental efforts have recently been initiated to develop a series of audio-visual Briefs of projects discussed in the written Briefs.

All the Regional Rehabilitation Research Institutes are funded to provide consultation to state Departments of Vocational Rehabilitation and to develop series of monographs on specific treatment areas in rehabilitation. The University of Wisconsin Regional Rehabilitation Research Institute has been funded by RUB to experiment with a consultative project adapted from the "Visiting Psychologist" program of the American Psychological Association. Although there is other material produced for practitioners on a decentralized basis, e.g., monographs, the scope of these activities is not certain.

The journals produced within SRS, i.e., Aging, Rehabilitation Record, may also provide useful information, and the extent of coverage is good. Staff members of RUB have themselves contributed articles to these journals on the utilization process and also on selected subjects pertaining to rehabilitation and social welfare research.

The Division of Aging, in conjunction with the Administration on Aging, distributes a series of Administrative Papers to practitioners in the field of aging. These Papers are produced by the grantees soon after project completion and contain either summaries or portions of the reports that have particular relevance to the audience at hand. They are not edited by AOA.

b) For professional practitioners: The MHSV is currently developing a magazine, Innovations, which will be directed to practitioners both in mental health centers and in other mental health facilities. This magazine will include major articles, written under contract, on NIMH programs and other innovative programs; it also will address problems that people may have in the field, as well as provide solutions to these problems based on research, innovative programs, and reviews of the literature. An occasional pamphlet has been developed by Branch staff for specific groups within the centers, e.g., a pamphlet on Indian mental health intended to reach both professionals and consumers.

Although much of the effort of the Clearinghouse in the past has been devoted to researchers, they recently have developed a journal, including condensations of abstracts and articles, which has been of interest to practitioners. The Center for Studies of Narcotic Addiction and Drug Abuse, in conjunction with the Clearinghouse for Drug Abuse Information, has produced various products such as films and educational materials for practitioners or "caretaker" groups.

However, many efforts within NIMH are still directed to the research audience. For example, many of the symposia and conferences supported by the above-named Center and the Division of Extramural Research are designed specifically to disseminate information to researchers.

b) For professional practitioners: Targetted Communications, an annual program area of NCEC, are contracts which produce summaries of what is currently known about certain problem areas based on an examination of the literature, best practices, etc. One of the products of each Targetted Communication contract is a Putting Research into Educational Practice (PREP) report. This monthly report contains interpretive information about particular problems, e.g., examination of use of paraprofessionals in schools. In addition to the PREP reports, other dissemination efforts are used in the Targetted Communication contracts. A second phase which emphasizes interpersonal communication applies the same knowledge used in PREP at conferences and/or training sessions through film or audio presentations. A few of these "Phase II" contracts have been funded and NCEC hopes to be able to fund more of them.

ERC uses many sources to perform their reference function: computer terminal operation, PREP kits plus a list of all PREP kits, Clearinghouse products developed over the last year plus a list of all past Clearinghouse products in one volume, copies of Model Programs developed by other Divisions, current copies of RIE and CIJE, and certain directories.

4.15 Interpretation

The most important and most difficult type of transformation is the interpretation, i.e., transforming R&D into a plan of action for users. Even the most well-written report usually does not speak for itself, and receivers will often dismiss good research reports with a shrug and a "so what" simply because no one has bothered to spell out implications, to indicate what action steps might be taken, what policies changed, etc. This kind of activity takes much thought and skill, moreover it probably must also be targetted to particular users in particular circumstances. Probably most interpretation activity has to take place in a situation of face-to-face spoken exchange and dialogue between researchers and users.

The maximal D&U system invests heavily in interpretation activities, both spoken and written, and it requires all of its R&D grantees and contractors to involve themselves and concern themselves with utilization issues.

c) For general public: press releases were cited as a form of information tailored for the general public. However, this group is not seen as a client within the scope of the Division's activities, and so most tailoring is directed to other groups.

The Division has in the recent past extended itself further and further into the interpretation task to aid the user and in some sense do his job for him. Some of these efforts appear to be done in-house but the more ambitious efforts are done under contract. One example of the former is a very excellent brochure entitled "Orientation, Counselling, and Assessment in Manpower Programs," a 19 page pamphlet written in a lucid style which takes the reader by the hand and leads him through the basics. It also keys the reader to other resource materials.

One example of the latter is Gordon and Erfurt's recently published manual on job coaching,* very carefully and thoughtfully written to fit the real situations that the job counselor faces in trying to place job seekers. The manual would appear to be the type of document that can fill a significant knowledge gap between research and practitioner. More documents of this type probably could be produced to fit the day-to-day needs of manpower professionals in various roles, assuming, of course, that there is sufficient research in given areas to make such interpretive works reasonably valid. One problem is the availability of good writers who both know the research and have a good feel for the practice situations. Through Dr. Jesse Gordon's Manpower Science Services, Inc. in

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*This is one of three coaching manuals developed by various contractors.

c) There has been some effort expended by RUB to reach the general public, although it has not been the focus of their activity. For this audience, RUB has sponsored projects to experiment with multi-media techniques of relaying information, e.g., a documentary of the international research program.

RUB is beginning efforts to interpret and spell out action steps for users. The Briefs have been designed in-house to include implications for users, although at a fairly general level. There is a basic distribution for all Briefs of 48,000; but beyond that, many of the Briefs have a special distribution. RUB is presently monitoring a project designed to develop a review of the literature on psychiatric rehabilitation, with a handbook to be developed from a summary of usable findings. Conferences on utilization of research sponsored by RUB may also provide for interpretive efforts. The guidelines developed by RUB for final report writing and more recently for applications and continuation requests may also induce the researcher himself to identify and discuss implications of his work.

Based on the directive from the Office of the Secretary, RUB and other staff will prepare implications from R&D findings for the bureaus as a part of the accountability mandate. These written implications are viewed as an interpretive effort to assist the bureaus in implementing the findings.

c) For general public: Responsibilities for reaching this audience lie primarily with the Office of Communications. A Clearinghouse staff member has noted a trend within this Office to include the general public and practitioners as well as researchers in their dissemination efforts; this shift in widening the scope of coverage was attributed to the placement of the Public Inquiries Section in the Clearinghouse in 1969. Although such efforts of the Clearinghouse have been undertaken only recently, there is already a contract underway which is designed to produce twenty Fact Sheets for the general public. These Fact Sheets are small pamphlets on critical areas of concern, e.g., juvenile delinquency, aging, alcoholism. Other efforts within this Office to reach the general public include television advertisements on specific mental health problems and general pamphlets.

The MHSV has initiated efforts which may have some value for interpretive activities, both written and oral. Some staff members have provided consultation to mental health service personnel which is sometimes used to pass on research information to clients; more often it appears that these visits are based on a particular piece of research. Researchers themselves have been encouraged to serve as "action consultants" in spelling out implications of their research and in passing on information. The Branch and other MHS Program Division staff recently formed a Program Analysis Group to review results of evaluation contracts and to consider how various implications should be implemented.

In conjunction with contractors, Branch staff recently have developed manuals on research utilization, on ways to use information sources, and on techniques of program evaluation. The proposed magazine to be developed by the Branch, Innovations, may provide a means to spell out implications of research projects to clients, since some of its articles will be designed to present problems and solutions to problems (sometimes based on research) of concern to the mental health service personnel. However, since the full journal has not been produced yet, it is not certain whether its focus will be on interpretive efforts.

c) For the general public: Communication to the general public is not seen as a part of the NCEC mission.

Since the distinction between "tailoring" and "interpretation" is not sharply defined, much of what has been said in the section above applies here also. "Targetted Communications," for example, usually go beyond the mere presentation of facts to make derivations of implications for their intended audience. One of the products of the Targetted Communication program, the PREP report, contains interpretive information about particular problems. The PREP kits narrow down the information and are useful since "educators don't like to read alot." In the same way, the extension agent system will take the research to the teachers.

There is an attempt to use a different range of communication resources at different stages of the adoption process. In one set of projects for example, after the priority areas have been identified, there is an assessment of the better programs located across the country that are concerned with the priority areas. The same project will provide a manuscript describing programs; the Branch will subsequently produce a series of awareness pamphlets (e.g., on promising career education programs) so that they can promote the selected programs.

There is concern in OE over the fact that teachers may have to choose among various products competing on the market. To alleviate this problem, the Far West Laboratory for Educational Research and

Ann Arbor, Michigan, the Division is exploring the feasibility of non-print media for training purposes (including self-instructional tape cassettes and television taped instructional systems for use by counselors), but so far the forays into the non-print audio-visual field have been scarce.

Other in-house efforts have been undertaken to the end of interpretation. To develop "spin-off" from some R&D products Division staff have met with OPE staff, with OPE taking the lead in formulating plans for action based on deficiencies in the system as indicated by R&D results, e.g., actions formulated from the Marshall studies on Negro employment. The contracted research reports are required to spell out policy implications, and this part of the reports is carefully reviewed in draft form by Division staff and other ORD staff.

There does not appear to be any effort in the Division to make interpretive transformations directly for the job seekers, themselves, or for the general public.

4.16 Screening

The maximal D&U system employs a procedure for eliminating irrelevant, redundant, and invalidated knowledge from its data base in an effort to screen for quality materials.

Most of the Division's screening activities are in terms of screening materials to send to particular audiences or user groups. In screening for utilization, the size of the potential audience, the quality of the report, and the amount of interest in the subject are taken into consideration. As the decision of how many copies of a report should be printed is made by Division staff, it is very likely that this may serve as a measurement of quality, i.e., those reports judged to be of high quality would be printed in large quantity. To deal with the problem of irrelevant research, staff try to comb through their knowledge base to see if they can bend research to give answers to new questions.

Selecting research to be included in the Advanced Research Briefs involves screening at several different levels. Each agency that conducts research in DOL must select research information that policy people should be aware of and then summarize the selected information and findings to spell out policy implications. In determining what research to send to the Secretary of DOL, staff must consider if the research findings have potential implications for policy pointing to new programs and if the research findings provide new insights to new programs. Project officers are responsible for reading and

Most of RUB's screening activities concern the selection of projects to be summarized into R&D Briefs. At least one time, in 1969, all Research Briefs written by R&D project staff that had been received up to then were screened by RUB staff. The twenty considered best in terms of validity, potential contribution to programs (usable findings), and timeliness were given to members of RUAC for comparative evaluation. Their comments were then quantified and the results used as a guide in selecting reports to be briefed. Although final reports have not been systematically evaluated over the years as they came in, much informal evaluation has always occurred so that the better reports typically had a higher visibility both in the central office and in the field than the poorer reports.

RUB is also concerned with verification and validation of existing research results. In the 1972 R&D Strategy, RUB has proposed a project to perform an external evaluation of all completed projects. One of the purposes of the Research Utilization Laboratories funded by RUB is to replicate and validate existing projects.

There was little evidence that interpretation activities were common in other units of NIMH; this may be due, in part, to the unspecified number and type of clients in other units or to an emphasis on researchers as users, a group for whom interpretation of research is not necessary. The Center for Studies of Crime and Delinquency, however, is considering the utilization of researchers as technical assistants to clients on a systematic basis through the funding of researchers for interpretation.

Although there doesn't seem to be any overall MHSV activity designed to serve as a knowledge surveillance mechanism for staff members, Branch staff are expected to continually review the emerging literature in their specialty areas. When a critical need for the development of better delivery techniques arises or when unsolicited grant proposals are received, the first responsibility of the staff member is to ascertain whether knowledge already exists relevant to that need or proposal. Literature reviews of specific topic areas are often prepared for this purpose; however, these reviews probably represent efforts to integrate the knowledge base rather than to screen for quality materials. Other screening efforts include a part of a new project designed to investigate better ways of screening for new knowledge, and an evaluation research measurement of the quality of incoming reports in terms of clarity, cogency, usefulness, and dissemination.

In response to complaints of overlapping and unsystematized information, an in-house study is being conducted in the MHS Division to analyze what information is going to the Regional Offices and in what ways it could be more precise. The National Clearinghouse for Mental Health Information (NCMHI)

Development has begun an ALERT system (Alternatives for Learning through Educational Research and Technology) which will look at all the packaged programs and products being offered and prepare documentation to help users make intelligent choices, citing the advantages and disadvantages of each, but not saying which one is best. As a forerunner of this service, the Lab had put out a series of multi-media kits (called "Integrated Information Units") describing curricula in social sciences and elementary science programs in a manner which allowed detailed comparison.

As a result of early complaints about the quality of literature in the system, ERIC Clearinghouses have in recent years begun to do more selective screening of their input. However, once documents are in the system, there is no further screening.

NCEC has on one occasion engaged in a major screening of products of the USOE-supported Regional Laboratories and Centers. This evalution project, conducted by the Educational Testing Service, called for the Labs and Centers to submit a number of products they considered to be closest to the dissemination stage. An ETS panel of experts reviewed the products and selected nine that were most appropriate for additional dissemination efforts. Three products received further dissemination efforts; the Los Angeles (SWERL) Lab's reading materials, the San Francisco ("Far West") Lab's Mini-Courses, and the University of Wisconsin R&D Center's Multi-Unit Elementary Schools. NCEC later subsidized special diffusion thrusts for two other products: the Far West Lab's Toy Lending Library and the Cooperative Urban Teacher Education (CUTE) project. Thus a total of five R&D based products received additional dissemination efforts based on the ETS study. Last May, ETS was contracted to do a second

4.20 Knowledge Transmissions

This function can be most simply analyzed according to the elements of the communication formula: who says what to whom by what channel to what effect. The last element is in the formula, the "effect," for the case of pure transmission without regard to the "helping" function is defined merely as receipt of the message. The other elements can be analyzed as follows:

writing a report on "everything that comes in"; they must also send it somewhere, and the destination depends on the timeliness and impact of the product.

In 1968 the Labor Market Information (LMI) Program was established under Section 106 of the Manpower Development and Training Act. It is stipulated that 2% of the M.A. budget must be used to improve quality and quantity of information on the labor market available to users of this information (including state and local employment offices, job seekers, etc.).

Although the Division of R&D Utilization and the larger units within which it works appear to have many viable procedures for screening for new knowledge and for targetting new products for particular user groups, it is not certain whether these screening mechanisms continue to operate on the existing knowledge base in an effort to eliminate materials of lesser quality.

One non-RUB respondent stated that the general policy of SRS is to scrutinize the whole research program to see whether the research is useful, and if it is not, in numerous cases the projects will be discontinued.

is concerned with the scientific and professional accuracy of the body of information with which it works. In-house quality control involves staff members keeping up on all developments in the field and sampling all input and all output. Given that the Clearinghouse contains such a plethora of information, one respondent felt that this overload might cut down on utilization "just from users screening out too much themselves."

It appears that the Branch and the larger agency have procedures for screening for new knowledge, but it was uncertain as to whether they screened the knowledge already present in the data base in terms of eliminating some of lesser quality materials.

evaluation study. It was felt that once a file of promising practices was collected, it would be necessary to have an independent validation of these school-based practices. This type of evaluation was done on the reading series.

Some of the practices to be exhibited at the Education Innovation Fair (BESE) were validated by NCEC through criteria used to identify 20 successful Title I projects. The criteria developed jointly by the Bureau, NCEC and a contracted researcher include the requirements that the project must be within a reasonable price range so it can be replicated and that the project has to be in operation for at least two years, with demonstrated success and continuity. Subsequently, these criteria were dropped and replaced by the more rudimentary requirements that the projects are in legal compliance and have demonstrated good results. BESE is having problems locating and disseminating a great number of projects or practices that they can stand behind in terms of validated efforts. For this reason, the idea of incorporating state selection for validation is a consideration. If the states think that projects are good, they can submit an application to have projects disseminated. By preparing states to do their own evaluations as innovation projects, it is hoped that states will be able to create innovations and not just the structures around the innovations. Furthermore, it was felt that NCEC could not do the validation work for the Bureau as they would never have enough money.

Along with an ongoing commitment to a certain critical mass of transformation and acquisition functions, within NCEC there is a trend toward more and more transmission activities.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
4.21 WHO: Research and development producers who work in areas relevant to the agency's mission. The maximal D&U system:		
a) has defined what these R&D sources should be	a) The relevant research community is not clearly defined in any formal sense. The Division tends to limit its definition of research to that sponsored by ORD, primarily due to lack of staff time and resources. However, many R&D reports contain good reviews of the literature, and these are sometimes used by the staff. The staff, with deep involvement in some projects and areas, are able to pick up and relay reports, articles, etc., on work not sponsored directly by ORD.	a) There is no clear definition of the relevant universe of researchers, particularly since such a wide range of research programs exists in SRS. RUB initially limited its definition of research to that sponsored by the rehabilitation research program, although the Branch has been expanding its universe to include social welfare researchers, etc., to obtain an SRS-wide scope. Earlier, there was more reliance on unsolicited proposals in making funding decisions, which may have limited the definition of researchers to those well established. However, SRS has been turning increasingly to RFP's in soliciting researchers.
b) has an awareness of who and where they are	b) The Division seems to have good informal awareness of key established researchers in the manpower area, as represented by work in the Manpower R&D Projects annual report and membership on the National Manpower Policy Task Force, a group formed of prominent researchers in the field. The Research Subcommittee of the National Manpower Advisory Council is another source of guidance. In addition, the dissertation grants program and the annual New Manpower Researchers Conference bring new researchers to the surface and give them some familiarity with the agency, while making Division and other staff aware of them.	b) The Branch has a general awareness of the rehabilitation research community, especially since much of this research is done by the client groups themselves (50% or more of these projects are done outside of a university setting by state Departments of Vocational Rehabilitation, by nonprofit and profit national organizations, etc.). There has also been a conscious development of a "cadre" of people who can now do research in fields that didn't even exist before. This development comes through support for establishment of new professional schools in universities and through the bureau training programs. Previously, external review boards composed of researchers were used to shape and direct the R&D efforts. However, the function of the review boards has changed to that of reacting to proposed SRS research. Staff members noted that they still know where these experts are and can seek their advice when needed.

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a) Given the inter-disciplinary nature of mental health research, there is not just one relevant population of researchers, but many. No one unit in NIMH has responsibility for defining all of the R&D resources of the agency; instead, this defining process occurs on a more decentralized basis. Staff in each program and research area within and outside of the MHSV have informally defined the relevant researchers in their areas of expertise, e.g., staff in the MHSV would define R&D sources in the sub-areas of mental health services. Although there may be some overlap among these populations of researchers in the various NIMH programs, it was not clear whether there was any system for determining where the overlap exists.	a) NCEC's potential researcher pool includes the entire educational R&D community, a very large, widely dispersed and still rapidly expanding sub-culture, visibly but not inclusively represented by the American Educational Research Association (AERA).
b) The MHSV staff members, as well as staff in other parts of the agency, have a fairly high level of awareness of in-house and outside researchers in their particular areas of interest. A good example of this awareness is the "cadre" which was organized by a staff member of the MHSV. This "cadre" is composed of experts in the area of children's services and was developed through the staff member's cognizance of the available experts within NIMH. This awareness can be partially attributed to the attempt noted by most staff members interviewed to "keep on top" of their areas of expertise; staff are encouraged to maintain contacts with researchers in their field. It was reported that an awareness of researchers was promoted by consultation around project applications, by conferences, and by attendance and participation in professional meetings. One other mechanism to develop staff awareness of the fields of researchers is the training programs which exist in NIMH, some of which are designed to develop new researcher potentials; however, it is not certain how well the training and research components of the separate units of NIMH are linked together.	b) The NCEC leadership participates fairly vigorously and visibly in AERA meetings and maintains professional contact with specialty fields through the decentralized Clearinghouses, some of which are attached to their specialty professional associations. Through the comprehensive literature indexing of ERIC, NCEC also has a potential capability of identifying tens of thousands of researchers by specialty, interest, geography, etc.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
c) has access to them and their work	c) The annual review mentioned above appears to give good access to the work of researchers. Access to the researchers themselves appears to be more limited: staff members mentioned that there is a small "stable" of researchers with whom they have worked, and with whom they are thus more likely to contact in the future. Sponsorship by ORD of the Experimental Manpower Laboratories is another means of maintaining access to this group of researchers. One respondent indicated the possible difficulty in getting researchers interested in working on problems staff members see as needing research. Sole source funding of researchers (more common in the past, and now changing) also may have limited the number of researchers with whom staff members might be familiar.	c) RUB may have access to at least some researchers, since the Regional Research Institutes, Research Utilization Labs, and the R&T Centers are funded by and responsible to the agency. The annotated listing and other well documented publications may also give access to the work of researchers.
4.22 TO WHOM: The users of research and development.		
The maximal D&U system:		
a) has defined who the user-receivers of the R&D should be	a) There is considerable discussion of this, and a division of opinion. Research is viewed as primarily relevant for policy makers, while E&D projects are seen as primarily directed to USES, OEDP, and state agencies. There is very little consideration of reaching consumers directly, and no concern for reaching the general public through the mass media. Also, researchers as an audience get little attention.	a) There has been concern in SRS to define the relevant users since the agency offers such a diversity of services, yet there are still differences of opinion. Researchers are encouraged to define more clearly the users of each product so they are no longer identified in such broad terms as to include "almost the universe." Although the buréaus have their own "target populations" and Congressional committees to which they report, there has been some effort to identify overlapping client groups where such overlap does exist. On the other hand, the issue has been raised of whether the research program has used the legislative mandates too loosely.

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c) Given the major emphasis of the MHSV and other portions of NIMH on research development, there is great opportunity for access to researchers by means of consultation with potential applicants. Outsiders and staff within MHSV also cited the use of conferences, professional organizations, and informal meetings as ways of maintaining contacts with their specific "stables" of researchers.

Access through project monitoring apparently has not been as strongly emphasized as pre-funding consultation, given the heavy investment of staff time throughout NIMH in the "development" of research projects.

a) As one respondent stated, "each Division has its own users and its own ways of thinking about applications of knowledge." Thus, the definition of relevant users appears to be based on the type of research funded by each specific unit, with clients ranging from those people who are likely to have some impact on changing the delivery of mental health services in the MHSV program to "just the scientists themselves" in the more basic research programs of NIMH. It also was evident that some of the units did not define their client groups very specifically, although some units have begun making conscious efforts to specify clients. OPPE has clearly defined a select group of policy makers as recipients for the evaluation studies they sponsor. Although initially

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c) Access to this sprawling network is necessarily limited and selective. Because NCEC has had only a very limited and restricted research budget, its primary means of accessing researchers directly is via small contracts to develop bibliographies, review literature, and make interpretive summaries. Much of this work is channeled through the Clearinghouses. The Clearinghouses, in turn, are likely to be somewhat parochial both in terms of their specialties and their geography. There is also some doubt as to whether the ERIC centers can attract the highest calibre of researchers for these tasks, especially with very limited and restricted budgets at their disposal.

In contrast, within the specialty of D&U research, NCEC has excellent contacts with key scholars through its Research Advisory Committee and through a series of contracts with research centers at Michigan, Michigan State, Columbia, and Stanford. When promising researchers emerge in this field, the NCEC leadership is almost immediately aware of who they are and is generally receptive to their input.

a) Broadly speaking, NCEC's clients include the professional educational community in general with special emphasis on practitioners and decision makers in operating school districts across the nation. Out of this total population, certain subsystems have been singled out as special priority targets because of their special status as key decision makers or linkers to the rest of the system. Thus, the state education agencies have received special attention and state personnel receive the most contact on a day-to-day basis.

Educational decision makers who need access to valid information to make rational decisions are also considered to be priority clients; these include curriculum development people, superintendents, principals, and local

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
b) has an awareness of who they are and where they are located	b) There is good knowledge of policy people in direct chain of command, and knowledge of channels or offices by which they transmit information. Also there is reasonably good awareness of state agencies as an audience; but we are not sure if this awareness extends deeply into all those agencies offering employment help. There was some concern expressed over the limited information available about this audience, e.g., organizational studies. We found little awareness of researchers, job seekers or the general public as audiences.	b) There is good knowledge of the chain of policy people and the formal channels through which information can be transmitted to them. The Chief of RUB has been assigned by the Office of Planning, Research, and Training (OPRT) as the "Objective Manager" to work on the objective of developing a communication plan for OPRT; he has developed a flow chart which indicates the links and clearance procedures for all information passed through the agency. There is some awareness of state agencies as an audience, particularly since the Research Utilization Specialists have been assigned to link to this audience directly. The extent of knowledge available about this audience is not certain.

operating primarily for researchers and the scientific community, the Clearinghouse staff noted that they are consciously including other groups in their client base, ranging from students to practitioners and the general public.

b) Given that various units in NIMH define their clients at different levels of specificity, there is a varying awareness of who they are. The MHSV, given the nature of their services to a well-defined population of clients (including mental health centers and hospitals), can locate their clients relatively easily. Staff in portions of the basic research programs have a good awareness of the researchers (in this case, clients) included in their peer group. However, there was not a general awareness throughout NIMH regarding the client groups of other units. For example, one staff member in the basic research program noted that in trying to develop a project which would encourage basic researchers and practitioners to work together, he would not be able to identify the practitioners who would be interested in such a venture.

and regional curriculum and instructional leaders and coordinators. The Dissemination Programs Branch is more concerned with local agencies; most of the Branch efforts are directed to people in curriculum development at the local level rather than at the state level. Clients of the Educational Reference Center (ERC) are educational decision makers within OE.

In the three pilot state programs of NCEC, each state had to decide how they would employ their extension agent: two states used intermediate district offices and the third, local districts. The agent is situated at the district or local level in order to be able to have access to local teachers and administrators.

The educational field was seen by one NCEC respondent as being like a "patchwork": various programs, legislative authorizations, and constituencies. This creates a problem of duplication which is not a result of physical distance. "It's just not easy to distinguish differences in programs sometimes, e.g., when you tell a bureau that NCEC is about to disseminate something for them, they will just say that it is not enough." This respondent felt that many people in OE don't know what NCEC is "all about." Although one way to avoid such duplication of efforts would be through joint funding, there are legal difficulties present. By law, some funds can only be used for certain types of agencies, certain types of client systems, or only by contract or grant.

b) The clients of the extension system include educators (both teachers and administrators) at the state and local levels. The agents themselves will be serving the local level primarily because they will be placed in local units.

Two current contracts are partly aimed at building greater awareness of potential knowledge users. One contract with Havelock at Michigan is surveying resource utilization in the innovation process in a national probability sample of 350 school districts. The project will show the extent of use of such facilities as ERIC at the local level in different regions and in districts of different size and character. Another project by Paisley at Stanford will identify users and user information needs by educational role.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
		Little mention was made of researchers or the general public as audiences, although some efforts have been expended on behalf of both.
c) has access to them	c) Utilization staff have good access to policy people in direct chain of command through streams of memos, requested position statements, and informal contacts, but steps are not jumped easily. The ORD director is able and willing to take the initiative to reach top levels if he feels it is warranted. The National Manpower Policy Task Force and the National Manpower Advisory Committee, through its Research Subcommittee, are important potential sources of influence at the highest level as is the Manpower Report of the President. Contacts with the Office of Policy and Evaluation (OPE) have not been formalized, with the Division having no regular access to this Office; OPE has responsibilities for sending research information to the policy makers. OPE, in turn, may not be receiving all policy relevant research that could be passed upwards. A new staff member of the Division of R&D Utilization, who formerly worked in OPE, recently has been assigned to develop contacts with certain staff in OPE in order to improve access. Part of the problem has been that staff feel that they must know policy needs better; OPE has not yet given any guidelines regarding these needs. Access of the Division to the regional, state, and local offices is also incomplete. The Division and other units at the federal level must clear through the Deputy Manpower Administrator's Office all material which is sent to the regions. The regional and state offices, in turn, have the option of distributing materials as they choose. To improve access to the regions, two Division staff members have been assigned to develop plans for informal communication with the regional offices.	c) Access to policy makers is primarily through formal channels, involving required clearance procedures. Access to others in ORD and to the program people has been potentially increased by the establishment of liaison persons in all the research divisions and bureaus. Task forces and committee meetings which are commonly organized to work on specific problems also serve as good entry points. Most of the regions have recently designated "R&D Specialists" who may serve as a "bridge," although all information sent from the central organization must be cleared through the Office of the Associate Administrator for Field Operations. The role of the RU Specialists has been designed to break into the state and regional network (or create a network if none exists) although the effectiveness of this role is not yet known. RUB has expressed great concern to develop a "linkage model" at the local and state levels.

c) The primary mode of access to policy makers open to Division staffs appears to be through in-house task forces and committees which are occasionally set up around specific problem areas. Formal, written reports sent to these policy makers were cited as another point of access. However, staff in the Offices appear to have more ready access to this user group given that some of them have been assigned the responsibility of providing ready responses to the requests of this group.

NIMH has been described by some respondents as a very "horizontal" and "isolated" structure; although staff members in the various units have physical access to each other in that they are located in the same building, it was not clear whether this physical proximity carried over into actual interactions in all cases.

Access to the practitioner groups is not common to all of the units in NIMH. The MHSV and its larger Division have a good source of access to local mental health centers through their mechanism of providing grants for the operation of the local centers; one staff member noted that these grants helped to "open doors and stimulate communication." Access to the Regional Offices by the MHSV and the MHS Program Division also appears to be good, given the historical ties with the regional staff. At one time, regional staff were funded by this central office and this tie has carried over to the present, even though the staffs are no longer commonly funded. Access to these Regional Offices by other units is not so well developed; one respondent noted that the only access or outlet he presently had to the regions was through the guidelines they developed at the federal level.

c) NCEC goes through intermediaries to reach users: in the National Secretariat Project, they have established a formal structure to "get into" the 50 states. There is one dissemination representative (nominated by the Chief State Officer) in each state and these representatives meet once or twice a year. An important purpose of these meetings is to allow cross-fertilization and learning between NCEC staff and the representatives. Information is presented on the dissemination programs operating under NCEC, needs and reactions to NCEC products and policies are solicited, and the dissemination representatives inform NCEC of their activities. There is contact with some policy makers in OPPE on a weekly basis.

The Clearinghouse staffs have close associations with their professional groups and many of the Clearinghouses have columns in professional journals to reach specialized audiences within their professional fields. NCEC staff members have participated on a number of task forces around different areas, e.g., renewal strategy. There is contact with BESE and Titles I and III staff members who know the states well and who disseminate for these programs. However, not all NCEC staff members are familiar with the Title III dissemination efforts. As there is some overlap in the functions of the units within OE, NCEC staff members have devoted time to liaison activities in an effort to prevent duplication of efforts.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
d) has surveillance mechanisms capable of identifying new and potential users	d) The Division, through some of its contracts, has been attempting to identify potential users. For example, in the project with the University of Arizona, special packages will be developed for new audiences, e.g., school counselors and employees. Yet this is still done on a project by project basis, with no general scanning mechanisms established. Although congressional mandate does not provide specifically for this kind of activity, the mandate is broad enough for the Division to work in this area. Also, new research topics appear to generate self-evident user groups (e.g., the shift from automation to training the disadvantaged brought in new clients).	d) New objectives and priorities developed by the top administrators generate new target populations, e.g., the shift to integrate services and the priority of the welfare client. However, there is no mechanism for surveillance of other potential audiences; instead, the legislative mandates have worked against developing mechanisms for expansion of client groups.
4.23 WHAT: The Research and Development Knowledge Base relevant to the agency's mission. The maximal D&U system:		
a) has the capacity to have published or reproduced any document from the knowledge base in sufficient quantity to reach all appropriate and ready users at a given point in time	a) There is heavy dependency on the U.S. Government Printing Office (GPO); use of GPO is required by law, which results in delays and adds steps to decision making. Very rapid turnaround of "hot" items seems to be impossible as is the reprinting or distribution of documents not printed by GPO (e.g., reprints from journals). Also, the money allocated for publications is rather severely limited and most of it is allocated to the Manpower Report.	a) It is a requirement that all documents produced in-house for publication, e.g., SRS Research, must be published by the U.S. Government Printing Office (G.P.O), which necessitates much editorial work. The majority of reports are either mimeographed, multilithed, or are published as monographs for wider distribution. The project director is responsible for the printing--supplemental awards for printing are usually made only when the report is to be published as a monograph or in some other form. RUB does not possess the capacity for rapid, in-house reproduction for wide distribution.

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d) There is no visible mechanism available across the units in NIMH for the surveillance of potential user groups. One MHSV staff member noted that their view of their client base has been somewhat "parochial" and that this view may carry over to other portions of the Institute as well: applied R&D is viewed as relevant to mental health service personnel and more basic research programs are viewed as relevant to researchers. However, there is one mechanism recently developed on a small scale which could be expanded to survey the usefulness of various research programs for various client groups. The Program Analysis Group set up in the MHS Program Division to review evaluation contracts for their implications and use for different groups could be expanded to include more user groups as well as more types of research products in NIMH. Others outside of the Branch noted some concern over expanding the relevant client population: "we have worked a great deal with professional audiences, but now it's time to worry about the government organization downward and the people upward in the organization, i.e., policy makers."	d) There is no current mechanism for regular surveillance of needs and identification of users. However, both the Havelock and the Paisley projects mentioned in 4.22b above are designed as pilot projects to explore the possibility of periodic systematic monitoring of this kind. In BESE, staff members are planning to set up Task Forces to help them identify new and potential buyers of innovations displayed at their Education Innovation Fair; they are not only trying to identify individual adopters or buyers, but also "adopter systems."
a) The requirement that all documents produced in-house for publication must be printed by the U.S. Government Printing Office (GPO) requires editorial work and sometimes a long time period to get things out; some people estimated from 3-9 months. It appears that the various units in NIMH do not possess the capacity for rapid, in-house reproduction of items for widespread distribution (capacity in terms of money and in terms of equipment). Staff members in several units of NIMH cited this deficiency as a problem, since as few as 10 copies of reports are available from research projects for distribution. However, one respondent in OPPE cited the use of a reproduction facility in Lexington, Kentucky, which has the capacity for rapid reproduction and even distribution of their evaluation reports; whether this same facility is available to other units in NIMH is not certain. Some units, e.g., the basic research programs, assume that the primary place for research results	a) NCEC has been viewed as the program with responsibility for dissemination. Bureau staffs are asked to put together a list of programs and projects which they think are exemplary in nature and NCEC selects programs and projects to "push" from these lists. NCEC then tries to disseminate information about these programs and to assist in implementing them; however, dollar constraints limit the number of selected products. Although NCEC works for collaborative establishment of criteria in the validation process with the Bureaus, Bureau staff are not always pleased with the products selected from their Bureaus. Although NCEC uses available reproduction facilities as much as possible, all printing runs of over 25,000 pages must go through the Government Printing Office (GPO). This process represents a bottleneck in that the average GPO turnaround is from four to six months. The in-house clearance procedures are also becoming more complicated in that there is an OE Publica-

Maximal D&U System	M.A. Division of R&D Utilization	SRS Research Utilization Branch
b) labels and otherwise appropriately identifies documents and knowledgeable persons	b) The R&D reports submitted by contractors are widely distributed and are never anonymous. However, most other documents involving transformations appear to be anonymous. In fact, authors' and editors' names are sometimes deliberately deleted or buried (e.g., Breakthrough for Disadvantaged Youth). This may be a result of an official written policy promulgated by the Department Office of Information, Publications,	b) Documents are generally well identified as to origin and sources for further information, e.g., each of the R&D Briefs lists the title of the full report and the address of the grantee.

to appear will be in the various professional journals, which could require a lag time of from 1-3 years after the termination of the project.

b) Documents produced by the various units such as the Clearinghouse, OPPE, and specific Divisions, generally identify both the source of the information (as to who developed it) and the places to obtain more information. Most of the items produced in-house go through the Clearinghouse staff, since "they are the hardware people and the operating arm" of NIMH.

tions Office that must review everything as well as five or six other steps in the review process. Some ERIC Clearinghouses have developed outside arrangements to get their products printed free of charge; those Clearinghouses that publish their own materials have to go through GPO which adds several steps and takes more time.

The Dissemination Programs Branch receives 500 copies of the PREP report each month and sends half of these to the state dissemination representatives. Advance notice of each report is given in a PREP Brief which is mailed out with the preceding month's PREP report. Two hundred copies of this brief are mailed to each state agency as well for distribution and advance order purposes. The states can then order in bulk from GPO or, like some states are doing presently, xerox copies by the hundreds and thousands to distribute within their states. It is cheaper to order from GPO, but it takes longer.

A request for copyright in the early stages of project development is encouraged by the Copyright Program staff in order to save time; otherwise, if the developer waits until the project is completed, it could be from one to two years before the finished product is processed and ready for market. In some cases, the publishers help in this early stage of development and put in some of their own money for the project to speed up completion.

One non-NCEC respondent noted a complaint that state people often have about ERIC: those people who do know about ERIC complain that it's a great bother to get the information as it may take months to get a request filled and once they receive the information, it may not be what they want. Some NCEC personnel would agree that there are serious turnaround problems with some ERIC products as a result of the GPO and EDRS process.

b) For each document selected for ERIC, the Clearinghouses prepare a bibliographic citation, a 200 word abstract, and a list of descriptors keyed to the ERIC Thesaurus. Citations and abstracts are compiled and published in Research in Education (RIE).

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
	and Reports. Apart from the obvious disservice to such persons, such practices make it more difficult to identify documents and to relate them to previous work done by the same people. They also make it difficult for users to find responsible experts on a given topic through their works.	
c) catalogues and sorts all documents in the knowledge base for retrievability by all audiences according to their interest and is able to do this (or have it done) on a continuous basis as new knowledge is generated	c) The annual Manpower R&D Projects is a means of doing this. An index to subjects and authors is provided. There is also a cumulative index for research, though not for E&D projects. The "Projects" report does not include studies other than those funded by ORD even inside the Labor Department. One of the secretaries also maintains an extensive record of names and addresses of those interested in continually receiving information in general, as well as lists of those interested in specific subject areas.	c) The volume SRS Research produced by RUB contains a cumulative annotated listing of all research projects and films funded by the SRS research program since its beginning in 1955. There is a subject matter index and a project number index, although no author index. This volume will be updated annually. It does not include in-house material or related materials produced outside of SRS. However, RUB has developed a guide on how to use other existing information systems, such as ERIC. Other cataloguing and sorting occurs on a decentralized basis. The Division of Research and Training Centers has set up an information and clearinghouse function among the Research and Training (R&T) Centers, using such devices as a newsletter (The Informer) and a Directory of research projects (and abstracts) developed in the Centers. Future plans include a compilation of audio-visual material developed by the Centers and a bibliography of Center publications and reprints. Stout State College in Wisconsin has been funded to develop a clearinghouse in a specific subject area. The Florida RRRI has developed its own bibliography, and extended annotations of 1,400 reports have been sponsored in several areas. The Institute for the Crippled and Disabled (ICD), one of the RU Labs, has also been given funds to develop a clearinghouse on the rehabilitation of public welfare recipients; their survey of available research and literature has gone far beyond that funded by SRS.

c) The National Clearinghouse for Mental Health Information (NCMHI) was established in 1963 and has become the center in NIMH for the "collection, storage, retrieval, and dissemination of scientific information" in the area of mental health. Included in its computerized information system are abstracts from 926 "high yield" journals from all over the world, with 2600 journals of "lower yield" also reviewed for relevant articles. Books, monographs, workshop and conference proceedings, etc., also are included in this information base, although it was not certain how extensive the coverage is of such material. Such materials as documentation of exemplary practices or programs presently are not included in this base, although they are being considered for coverage. The 200-300 word abstracts are the prime source of indexing terms for each document; their Document Processing automatic indexing system offers each word in the abstract as a candidate for inclusion in the mental health vocabulary. Thus, a thesaurus of terms is not necessary to search the document base.

There are other files maintained by the Clearinghouse beyond the general NCMHI file. The Law file is composed of all of the state laws which pertain to mental health. The Research Grants file, containing about 2000 on-going records, contains information on grants which are presently active in NIMH; such information on each grant would include the purpose, subject, methodology, etc. The APA (American Psychiatric Association) file is composed of abstracts and bibliographic data which eventually will become part of the NCMHI file. The Drug Abuse Information System (DAISY) includes abstracts and bibliographic data, copied from some of the other files, which deals primarily with drug abuse problems. The Drug Abuse Program Oriented System (POSY) is a file composed of information on drug abuse treatment facilities and other drug-related organizations nationwide. These five files are updated less frequently than the general NCMHI file which is updated continuously.

There is no corresponding file of knowledgeable persons who could act as expert consultants on specific educational problems, apart from authors of ERIC documents.

c) Basically, ERIC is considered to be the "wherewithal" for developing and maintaining selected R&D and R&D-related reports. A study is underway to evaluate user needs and to develop alternatives to the present file partitions, so that the ERIC files can be more useful to practitioners. The use of a thesaurus as the controlling access mechanism for ERIC has created some problems. For example, some terms change meaning over time and some have different meanings for different groups; some of these issues are now being explored in a contract to LEASCO. Another problem concerns the standardization of indexing. To insure that a given document is not processed more than once, each Clearinghouse is assigned a specific domain of coverage; the scope of each Clearinghouse is then broadcast to the others and overlapping documents are routed to one place for final processing.

In addition to RIE which covers research-based literature, the Clearinghouses produce another monthly abstracting and indexing journal called Current Index of Journals in Education (CIJE) which covers the latest developments in journal articles. CIJE also has an annual index. The Clearinghouses decide on the journals to be covered, although the contractor creates the indexes and abstracts of the journals. There are three types of journal coverage: cover-to-cover coverage of selected journals; articles periodically selected out of other journals; and some journals covered on a "one shot basis."

Increasingly, the USOE-sponsored R&D centers and laboratories are developing dissemination mechanisms of their own which are available to NCEC staff. The centers are establishing an information system which will allow access on a topical basis. A catalogue is being produced which will have a project description of all products coming out of the Labs.

Maximal D&U System	*N.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
d) files and stores all documents in the knowledge base in a manner which allows access to and distribution of any document at any time	d) The Division maintains an in-house, manual system of storage and access, which generally allows them to provide documents at any time. Staff also maintain storage of older material for some purposes. The DOL library is seen as a distribution point for some ORD information. Final reports are routinely processed into the National Technical Information Service (NTIS), and a complete set of microfiche copies of all reports stored in both NTIS and ERIC is being assembled.	d) RUB has made arrangements to have all research documents stored in NTIS with microfiche and hard copy capability. They have also developed an SRS-wide information system, including abstracts of all projects from the R&D program. A contract is presently in negotiation to establish the software elements for a computerized system, and an existing contract is being renegotiated to include more information in the system, specifically R&T Center abstracts and projects in SRS Research for which there are no existing abstracts. Requests for material on specific subjects are also processed by one of the staff in RUB, but searches must be done manually.

Thus, the Clearinghouse has assumed the role of maintaining the knowledge base on mental health even beyond that of information generated by NIMH research. Given the nature of some of its files, it also has begun attempts to catalogue and store documents separately for particular audiences, e.g., those people concerned with drug abuse. A Clearinghouse on alcoholism is planned for the future. The various bibliographies on specific problem areas also come from this knowledge base.

Even with this base, however, there have been complaints that the abstracts included in the NCMHI have been of a highly "technical" nature and that the technical nature of the information has limited the use of this base to researcher-professional communities.

d) Although the Clearinghouse has abstracts and microfiche of relevant journal articles and other documents stored in its information base, it does not actively disseminate these. Thus, clients may find it difficult to obtain a specific research report desired. However, there is a documents center from which the public can purchase copies of in-house products, e.g., the syntheses produced in OPPE. OPPE itself recently established a Documentation Center where copies of the evaluation reports can be read, although there are no copies presently available for purchase. Eventually, OPPE plans to send these evaluation reports to the Commerce Department Clearinghouse where copies can be purchased by anyone.

d) ERIC is designed explicitly to fulfill this function, assuring monthly updating and access to knowledge through batch processing. The Educational Reference Center (ERC) does provide interactive access for OE staff, but this is not generally available to practitioners. Some users are picking up the ERIC data base for further dissemination, e.g., in Montgomery County, Maryland, they have developed their own information system with all of the ERIC files on hand. Other local agencies have also done this.

The abstracts and indexes of the journals covered by the Clearinghouses are published in CIJE monthly by a private firm, and the abstracts that go to GPO are used for the monthly journal RIE. The original documents on which the abstracts are based are sent to another contractor, the Educational Document Reproducing Service, where they are put onto microfiche and hard copy, assuming there is no problem with the copyright. One non-NCEC respondent felt that RIE and CIJE did not provide sufficient information as to what is in the ERIC information system.

Elsewhere in OE, there have been various library units and reference units set up. For example, some of the research coordinating units (RCU) sponsored by the Bureau of Vocational-Technical Education have set up "satellite centers" where there are ERIC-type reading rooms within driving distance of every vocational district in the state.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
e) files and stores access information to all knowledgeable persons for relevant topics	e) The annual *Manpower R&D Projects* contains an author index; otherwise, there is no comprehensive cataloguing or filing of resource experts. This happens informally, however, and on a decentralized basis. For example, each of the Division staff members involved in special sub-areas of R&D on manpower have informally accumulated mailing lists of people interested in the sub-areas, as well as lists of people with expertise in these fields. Some of ORD's contractors also maintain lists; for example, the Experimental Manpower Laboratory for Corrections at Montgomery, Alabama, has developed a card file of all visitors and a mailing list of those interested in this correctional field.	e) *SRS Research* does not contain an author index. There is no cataloguing or filing system for researcher sources, although some of the bibliographies developed on a decentralized basis have an author index, e.g., the *Bibliography of R&D Reports* produced in Florida. However, RUB has developed a directory of rehabilitation consultants. The Division of Research and Training Centers has also produced a training directory of its Centers.
It is important to note that storage is a necessary prerequisite to transmission because of both the limited capacities of information channels and the necessary dysynchronization of knowledge builders and knowledge users. The means of information storage in this age of technology are many and include audio and video tape, punched cards, films, and computer memory tapes, drums and cores. Nevertheless, the primary knowledge base is still mostly stored and transmitted in two modes: *written and spoken words*. Therefore, whatever other storage capacities a D&U system may have, it *must* have a complete written document storage capacity *and* a spoken word storage capability. Spoken word storage at this state of available technology basically means human brain storage, having on file and in memory the names, addresses, and telephone numbers of people who are doing research and development work and/or have read, listened to and absorbed knowledge from the knowledge base in specific areas.		

NIMH Mental Health Services Development Branch

e) A few directories have been developed in NIMH which cite various resource groups: there is a directory available on the local mental health centers, as well as a rural mental health directory; the POSY file in the Clearinghouse documents all of the drug-related facilities offering treatment nationwide; one of the programs in the Division of Extramural Research has developed a contract designed to list various private funding sources for research support. However, there is no present cataloguing of the various research and resource personnel available for the whole NIMH system, although the sources of various documents included in the NCMHI information system may be searched.

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e) The Dissemination Programs Branch has talked about preparing directories of experts or consultants around particular problem areas, although they have not yet done so due to lack of funds.

The RCUs of the Bureau of Adult Vocational-Technical Education maintain directories of all vocational guidance counselors, all electronic teachers, etc. At the yearly RCU meeting, the Directory of RCU's is updated and then reproduced so that everyone in the field can keep abreast of their counterparts.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
In the maximal D&U system both the written and spoken storage mechanisms will be thoroughly indexed for retrieval but they will be effectively cross-indexed and referenced so that written and spoken sources can be matched easily. This cross-referencing is very important for a number of reasons: (a) it makes both storage systems much more accessible, (b) it allows cross-validation of information, and (c) it increases the number of alternatives for channel use in linking resources to users (see section 4.24 below).		
4.24 CHANNELS: The pathways by which information can travel from the R&D community to users. The maximal D&U system should have regularly used and efficient channels of communication established for both written and spoken messages and for both formal and informal messages between themselves and		
a) researchers	a) There are good contact relationships established between the utilization unit and many researchers through project monitors in ORD and through the "buddy system" which links utilization specialists to projects from their inception. In fact, of course, this represents a channel to a very small segment of all the researchers in the U.S. who have potential relevance but probably includes those who have high interest and expertise in manpower problems.	a) There is not a single research community to which RUB could link, but several different groups represented in the numerous research areas supported by SRS. Thus, RUB has not yet established a system to touch bases with the universe of relevant researchers. It appears that different functional groups in SRS have identified their own "experts."

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a) There is a wide range of research communities with which various units in NIMH interact, and the specific community for each research program appears to vary. However, it was evident that there were a number of good channels available to all of the units for the exchange of information with researchers. Many NIMH staff members who are professionals in specific disciplines, e.g., psychiatry, are encouraged to maintain professional contacts with other researchers through membership and participation in professional organizations. The heavy emphasis on consultation with researchers in the development of research projects allows a readily available channel. As one respondent stated, "there are between 200-300 professionals in the different sub-systems within NIMH, and they are constantly consulting at universities, centers, etc." Some of the research programs, e.g., the Division of Extramural Research, have cited the use of conferences that they sponsor to provide exchange. The peer review committee also provides a readily available channel to a small group of researchers.	a) NCEC staff have found it important to maintain both formal and informal contact with researchers. They get input through informal meetings and from groups like the American Educational Research Association (AERA) and their own Research Advisory Committee. Through the comprehensive literature indexing of ERIC, NCEC has the potential capability for identifying researchers by interest, specialty, geography, etc.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
b) policy makers	b) It appears that there is good upward communication to policy people via written channels. The 1971 Manpower Report of the President contains about 25 references to ORD-sponsored work and we understand that this document is widely circulated and used in the executive and legislative branches of government. All final reports are screened for policy relevance and when warranted are brought to the attention of the Assistant Secretary of OPE and ASPER through Advanced Research Briefs. R&D Summaries (containing two page summaries of reports) also may single out the relevant R&D; the Summaries go to staff assistants of policy makers. Informal and personal as well as formal and written channels are used. In one cited instance, a researcher was brought in to discuss his study with the Secretary of Labor. Such instances as briefings, meetings with task forces, etc., give evidence that the channels are available, whether or not they are frequently used.	b) It appears that there are formal channels for upward communication via written materials. However, the channels from the policy makers downward do not appear to be as clearly established. The RAUB in the intramural research program earlier had performed the function of highlighting relevant research with policy implications, but this function has not been clearly assigned to any single unit since the demise of RAUB. In-house task forces and committee meetings serve as potential channels to relay research information, but are not regularly used for this purpose.
c) practitioner-professionals	c) There are no direct official channels of communication to Manpower professionals except through the administrators of state agencies and their federal counterparts in USES and OEDP; this is an extremely cumbersome chain of communication. Some USES and OEDP staff recognize the responsibility for research utilization, but most appear to be under little pressure to utilize results themselves or to pass them on to the regions and states; yet direct ORD contact with state agencies is frowned upon. The only effective links today seem to be through experimental and demonstration projects themselves or their spin-offs to larger programs under federal control (e.g., NYC). Links to USES and OEDP are often made on an informal ad hoc basis, sometimes by visits from D&U unit staff hand carrying documents of apparent relevance. Such a personalized approach has its merits but clearly misses in terms of comprehensive coverage, reliability, and perhaps cost-effectiveness.	c) RUB has recognized the difficulties in setting up channels between the central office and state and local client groups, given the cumbersome chain involved. To set up a "bridge," the nine RU Specialists are operating in a state setting. RUB has also used the Specialists as a sounding board to test out new ideas, although the effectiveness of this link has not yet been evaluated. Links to the federal administrators themselves are effective to varying degrees. Some in RSA have been tied in very closely with RUB through specific project or program efforts. For example, the program of Public Assistance in Vocational Rehabilitation (PAVR), linking RUB, program people, the RU Specialists, and an RU Lab, has proven that such a network can be established. Yet, as one moves away from RSA with which RUB has closely worked, the channels are not so well established. Some of the other program people still have informal ties to the research programs that were formerly in their bureaus; yet the program

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b) The most common channels to policy makers that were cited by staff members in the various units include formal, written channels such as budget justifications and planning documents, as well as participation on in-house committees and task forces which convene around specific problem areas of concern to in-house policy makers. Staff in the Offices have used channels to policy makers more frequently since their primary responsibility is to this client group.

c) The availability of channels to the Regional Offices appears to vary across units in NIMH. The MHSV and its larger MHS Program Division have attempted to develop close ties to the regional staff, given that the Regional Offices have clearly defined access and channels to the states and locals through their monitoring and administrative duties. Whenever a MHSV staff member goes on a site visit to a specific mental health center, he works in collaboration with the regional and state staff; they often make the trip together. The Branch and MHS Program Division recently conducted a conference which included regional staff members and the "cadre" of experts in the children's area. At this conference, various issues were discussed which related directly to central-regional relationships: how to develop vehicles for providing on-going, updated information between the regions and the central office and how to gather and exchange information from the field. Complaints of overlap of information and "unsystematized" information and con-

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b) There are informal channels to the Deputy Commissioner to solicit support for NCEC; such support is important to advance the interests of NCEC in meetings with other OE Deputy Commissioners on budget trade-offs. The examiners and evaluators such as those employed by the Office of Management and Budget were viewed as accessible and NCEC staff make a point of presenting information to them. Indirect contact is achieved through the preparation of budgets, reports, guidelines and position papers, and Congressional correspondence, e.g., a Congressman may ask about a specific constituent's project being funded or about general information. However, no direct contact was cited with Congress or policy makers. Time is also spent writing justifications, working on crash assignments, and in liaison activities. Meetings have been held with policy people for help on particular programs and some NCEC staff members are called upon to give advice on D&U.

It would appear that NCEC has had relatively good access to middle level policy makers within USOE and advice is constantly sought on both sides via both personal contact and written memoranda.

c) In trying to promote change in educational practice, NCEC staff concentrate their efforts on state educational agencies and work in conjunction with them. A few programs are given additional money to set up demonstration-visitor center sites where workshops, training sessions, and technical consultant services are offered by project staff. In the Exemplary Programs and Practices area, contractors will evaluate practices and programs of particular priority areas; such practices will be validated, and demonstration centers will be set up at the sites where the most effective practices are found. This type of "validating" procedure is exemplified in a project in which ten model reading programs have been selected from 100 for further dissemination; three of these ten programs have subsequently been set up as demonstration sites. Project staff on the sites split their time between on-site demonstration work and consultation work. They may use funds for holding workshops, training sessions, and the

Generally speaking, since USES and ORD staff know each other on a personal basis, the basis of a good relationship exists. However, functional, organizational, and geographical separation make this linkage excessively difficult. The added fact that under decentralization USES and OEDP have little control over what state employment services choose to do, makes communication of research findings to the states through bureaucracy very difficult. Staff in the Division are increasingly realizing the importance of linking to the state and regional offices, given their added power and autonomy. Yet a study conducted last year in the Office of the Deputy Manpower Administrators indicated that the regional offices knew least about OPER (including ORD and OPE) of all the Manpower Programs.

On the other hand, there is regular input to various levels of professional practitioners via the "Manpower Research Visibility" section of the American Vocational Journal and through Manpower Magazine. We have no knowledge, however, of the likely impact on readers.

Another tactic in developing channels to users is to employ certain user groups themselves in promulgating or developing findings (this strategy has been called "utilization by subversion"). Examples of such contracts sponsored by the Division include the contract with the American Bar Association (ABA) in which ABA is promoting the results of an earlier law study; the National Civil Service League (NCSL) is contracted to develop new model civil service laws and to stimulate public hiring of the disadvantaged in the new emergency public service program. Both of these contractors are professional organizations outside of the Manpower Administration.

Recently, the Division has been encouraging the use of media other than print to develop channels with greater potential impact. Manpower Science Services, under contract, is translating written materials into cassettes and films for self-instructional courses to be used by practitioners. This is, as yet, being done on a limited scale.

people have been under little pressure to utilize the research results of ORD themselves or to relay such research to the state and regional programs. Some respondents felt that there were no "rewards" for having such a commitment.

Some ties with professional organizations such as the National Rehabilitation Association and the American Foundation for the Blind have been established through project funding.

It is noteworthy that RUB has been experimenting in-house to develop a new channel, particularly to the practitioners. A staff member is presently developing multi-media techniques to relay information. To date, experiments have centered around audio-visual productions based on selected R&D Briefs. However, projects considered in the future include the development of a "moving audio-visual van" experiment. This van would travel to various local agencies and present information on current SRS topics via motion pictures, slides, pamphlets and other media.

tacts which come from the central office to the Regional Offices surfaced at the conference, indicating that an efficient NIMH-wide channel has not been developed yet for all of the NIMH programs.

Channels to the various professional groups appear to be developed by staff members through their participation in professional associations and conferences; these channels vary across the agency, depending upon the particular definition of clients. However, channels to practitioners are not developed among all of the units, and the extent of these channels appears to be based on the orientation of the specific units. For example, the MHS Program Division has been described as being "vertically" oriented, with staff using consultation as a channel to practitioners. On the other hand, the Division of Extramural Research has been described as being very "horizontally" oriented, with most channels open to researchers and not to service personnel.

development of manuals and other projects. The Dissemination Programs Branch, which has been responsible for such projects, has developed some of the general publicity materials for the sites originally identified and has distributed them nationally.

PREP output is also used for conferences and workshops with state agency people as a means of reaching the practitioner, as are the Exemplary Practices installation efforts, and the Educational Products Display. When the Display is brought to a site, consultants from the Labs and R&D centers who know the products being displayed accompany the exhibit. Personal consultation with staff members of the Educational Materials Center (in the lobby of the OE building) is given upon request. The primary purpose of this latter display is to exhibit school materials produced by NCEC, other parts of OE (e.g., OPA), professional associations, and commercial firms.

One channel NCEC uses to professional associations is the maintenance of an "invisible college network" to insure that they are represented at major conferences and professional meetings. Staff members have served as resource people for such organizational meetings as AERA, the Association for Supervisors of Curriculum Development, and the American Association of School Administrators, and workshops have been conducted to develop a general awareness of ERIC, an awareness that is felt to be a problem among practitioners. All of the Clearinghouses answer questions and send out newsletters which report on the latest developments and issues. The Clearinghouse staffs have close associations with their professional groups and many staff members have columns that appear in professional journals. However, it was felt that there have been too few products created by the Clearinghouses which are directed toward the practitioners, such as how-to-do-it manuals.

The Copyright Program was made a part of NCEC because the function is considered to be a part of dissemination which transcends any Bureau. It facilitates channels to practitioners by allowing developers to make money and by bringing in private sector distribution channels. The program begins where ERIC leaves off; it is intended to facilitate publication and wide

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
d) consumers in their field of concern and e) the general public	d) No sustained information channels to the unemployed, hard-to-employ, underemployed, or job seekers are apparently available, because this function may be assigned to the Manpower Administration's Office of Information. However, in some cases, special mailouts have been conveyed, with a cover letter, to segments of this group, e.g., mailouts based on the "Study of Negro Employment in the South" were sent to 125 people in Memphis, Tennessee.	d) No direct information channels have been established by RUB to the disabled, the elderly, public assistance clients, or other needy potential users among SRS client populations, although some audio-visual productions have been prepared by other parts of the organization.

d-e) Given that one of the missions of NIMH includes the prevention of mental illness, the consumer group in this case would include the general public. For this group, several channels have been developed within the Office of Communications. Short television and radio "commercials" have been used periodically to alert the general public to specific mental health problems. As noted earlier, a contract sponsored by the Clearinghouse recently has begun in which 20 Fact Sheets will be developed for the general public on selected mental health problems.

dissemination of OE-subsidized R&D products and materials, e.g., audio-visual packets which cannot go into ERIC as well as "thick" books that are too big to put into ERIC. The decision of where to put the product (in ERIC or the Copyright Program) is left up to the developer. The Publishers Alert System is designed to assist developers in finding appropriate commercial outlets for their products; if a developer has a product that he wants to publish, he fills out a form and sends it to the Copyright staff. The form is then turned over to a contractor who prepares an announcement and sends this announcement to publishers.

Some important D&U activities take place outside NCEC. The Bureau of the Handicapped is setting up a national center to disseminate curricula and other products of their Bureau; they also have "media centers" for dissemination purposes. The Education Innovation Fair, sponsored by BESE, has influenced a few states to conduct fairs on their own, e.g., the New England Regional staff have met and presented projects of their states to other states. Annual reports to the states have also provided some "cross fertilization" among states. In the Bureau of Adult Vocational-Technical Education, some of the RCU's print and disseminate booklets to all of the school districts in their states. These booklets highlight materials that have appeared in ERIC and note how and where the documents are available as well as adding things with a "local flavor." Leaflets developed by some RCU's on the latest studies for particular groups include the 200 word abstract produced by their Clearinghouse. The abstract is put into their quarterly journal, ARMS, which goes out to the states; the journal also contains abstracts of completed reports in this research program. Dissemination also occurs to the professional groups.

d-e) NCEC has little direct contact with the public, parents, or students apart from the exhibits and book displays which are located in the lobby of the OE building. Primarily, the Office of Public Affairs has this function.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
	e) Press releases were cited as an outlet for important findings.	e) Under the auspices of "Project Alert," a channel has been set up in which timely pieces of research information will be sent from ORD to the Office of Public Affairs (OPA), and from OPA to the mass media, i.e., news releases, television, radio. In conjunction with OPA, an RUB staff member has developed a television program, video tapes, and other materials suitable for a general audience.
f) they should be able to build such channels between researchers and their knowledge base and these various audiences	f) The Division of R&D Utilization puts special emphasis on bringing researchers together with both decision makers and practitioner-professionals at the point at which their findings are becoming available. Sometimes contracts are given for the arrangement of such conferences. For example, the Brookings conference brought together researchers and users to discuss findings of the WIN programs. A model developed for another type of conference was exemplified in the University of Wisconsin conference involving regional and state employment service and mental health staff, with technical assistance follow-up provided to participants after the conference. Efforts are made to target these contacts on an ad hoc basis. Much energy goes into these efforts at person-to-person linkage, and they probably are effective in building a network of sorts between the research community and some of the practitioner audiences; but, coverage is bound to be far short of the total. The Division has also developed the strategy of using researchers as consultants or "purveyors" of technical assistance to user groups in such projects as Work Sample Assessment, NYC Goes to College, and Youth Tutoring Youth.	f) RUB builds these channels in two ways: (1) by planning and sponsoring *conferences* with users and researchers in attendance (four during 1971) and (2) by funding researchers to serve as consultants for clients. An example of the latter is the project at the University of Wisconsin RRRI in which a "Visiting Project Director" will serve as a consultant. In general, all of the RRRI's are mandated to provide consultative services to the state clients.
4.25 TO WHAT EFFECT: The acceptance and incorporation of the message by the receiver.		
The maximal D&U system continuously monitors user audiences of all types (policy, producer, etc.), to determine if communicated knowledge is being secured and used and to evaluate the effectiveness of messages and channels. It also should be able to use such evaluative information to redesign the system of D&U.	The Division does not monitor audience reception, except in the most informal and limited way, generally where personal relationships already exist. The Division informally does get some indicators of audience reception in the following ways: through evidence that findings have been incorporated into programs, general practice, or legislation (a chapter in the Breakthrough compendium was devoted to a discussion of the influence of R&D findings on legislation and the R&D Chapter of the 1969 Manpower	In the past, audience reception has been monitored by RUB in various informal ways: by obtaining comments from program staff on specific research reports; by using the RU Specialists as sensors and also obtaining their opinion and feedback on various experimental efforts; also by asking the readers of the Briefs via written questionnaires if they want to continue receiving them. However, some formal evaluative efforts have been planned in the 1972 R&D Strategy. RUB is sponsoring an

NIMH Mental Health Services Development Branch	*OE National Center for Educational Communication*
f) There have been scattered efforts to build channels between researchers and practitioners, although there was some concern over the lack of channels even between the basic and more applied researchers themselves. The MHSV has begun to use administrative supplements to allow the grantees to hold special conferences and to provide active consultation to other potential users. The Center for Studies of Narcotics and Drug Abuse has cited the use of conferences in a few cases to bring practitioners and researchers together, although most of the conferences that this unit has sponsored have been designed for researchers themselves. The Center for Studies of Crime and Delinquency is attempting to build up pools of researchers and experts who will be able to provide technical consultation to practitioners in their particular areas of concern. However, such channels are just opening up and there has been little funding available for this consulting activity.	f) The use of workshops, training sessions, and technical consultant services for some sites may serve as a channel between users and researchers. There is a dichotomy between research and instruction which has been a matter of status, with sanctions built in for crossing the line. Historically, there has been no effective channel for communication between researchers and practitioners; "researchers talk to researchers."
The monitoring of the reception of various audiences to research-based information appears to be done on a decentralized, informal basis. Several divisions cited the use of informal feedback from researchers as a means of monitoring the adequacy of information. The Clearinghouse uses tabulations of inquiries as a means of getting feedback for its operation. They are also developing a user reaction form.	In NCEC, there are evaluation studies being conducted of the Pilot State Dissemination Program, on the Educational Products Display, on ERIC, on various programs and products of the Clearinghouses, on the Exemplary Reading Practices, and on the Educational Communication Program. Presently, there is no formal mechanism set up to get feedback from users, although it was felt that the Clearinghouses could do more of this if so funded. The extension agents are expected to serve this function:

Report also discussed this topic); through the presence of discussions on R&D in user organs, such as in the Employment Service Letters and in the many specialized magazines; also by the number of requests they receive for information and reports.

Specific projects have been designed to study user impact. For example, a part of the contract for developing the "Research Visibility" column in the American Vocational Journal requires that a user-impact survey be done. The Experimental Manpower Laboratory of Corrections has also tried to survey users and to analyze use of its projects on a decentralized basis.

evaluation of the effectiveness of the RU Specialists. A nationwide sample study is also planned to obtain users' perceptions of the usefulness of the R&D Briefs. In addition, RUB has proposed a field validation study of projects which have been considered as exemplary or effective.

All of the RRRI's have a responsibility for evaluating the effectiveness of dissemination and utilization. For example, in Region 8 (Denver), the RRRI has surveyed the whole region and maintains a feedback mechanism to determine what information is seen as relevant by users.

ORD is planning to become involved in "testing" the acceptance of research products through their "management review process." They plan to produce findings from R&D projects which have relevance for program operations on a semi-annual basis and send these to agency administrators and policy makers. These administrators will then be asked what they have done, as heads of their programs, to implement the findings. A similar procedure has been planned for all of HEW at the instigation of the Office of the Secretary.

However, the MHSV has developed more formal means for monitoring audience reception. On the termination of projects, the Branch solicits responses from project developers as to how well they think they have been served by the Branch. At the same time, project directors are asked to cite who and how many persons use the project results. Various research projects have been sponsored by the Branch to determine how practitioners utilize information and also what types of projects are best received by clients. For example, as a part of the Fairweather project which focused on the development of "community lodge" services, the project director screened various staff members in hospitals to determine whether the results of projects were actually being used. An in-house study being conducted in another part of the MHS Program Division is looking at what information is going to the regions and how this information could be more precise. Yet in no part of NIMH does there appear to be a unit responsible for the monitoring of audience receptions at various levels.

as the agents work to install innovations produced by OE or OE-funded projects, NCEC hopes to establish a feedback loop between the installing agency and the producing agency. Through liaison, NCERD (or NIE) and the Labs would theoretically be able to get information from the agents and the retrieval centers on the gaps in research and in their knowledge base. In the Pilot States, this feedback was done on a close reporting procedure, but it was felt that it wouldn't be possible in a larger system as it was even difficult when the ten additional state and local information centers were funded in the Pilot State Project. Although there is very little feedback received on an organized basis, some indication of reception does come in certain products, e.g., they can show how many schools have installed demonstrations and have spent money for it.

NCEC is negotiating with the Office of Program Planning and Evaluation (OPPE) on the type of evaluation system for their extension system; OPPE wants to count the number of new products installed, whereas NCEC wants to count the number of people who ask questions. Additionally, NCEC wants to include other kinds of evaluation indices such as counting "rational rejections as wins," increased utilization of the system, and increased speed or decreased cost of adoption of a new program as evidence of success. No feedback is presently received from publishers concerning the Copyright Program, although OPPE has been asked to fund a project that would look at these comments and feedback; one respondent felt that such a study would be considered low priority, however.

There is a contract with a Clearinghouse to test user reactions to the Educational Materials Center and to assess the needs of the display visitors; these data will also be used in a sub-contract to a design firm concerning a permanent display structure in the lobby of the OE building. Material that is on display is not evaluated by NCEC staff members; instead, they try to get public reaction to these exhibits. ERC has contracted a study on QUERY users; although they receive feedback from users of the search service, there is no formal system set up. Some of the other centers do solicit feedback by appending brief questionnaires to search request responses. ERIC schedules yearly meetings with Clearinghouse people to share ideas and discuss problems. Two evaluation projects of ERIC products are the survey completed by the University of Indiana on the use of ERIC bibliographic tools and the contract with the Systems Development

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
4.30 User Helping The maximal D&U system should be able to help users implement, install, and adapt innovations based on R&D by training users in research utilization and resource retrieval. Additionally, maximal D&U activities should include developing user openness and the capacity to accept change and R&D. (There is some overlap between user helping and "User Self-Servicing," Function Set #1.)	The Division does not have any in-house capacity for user helping beyond the referral to persons and print sources. It is not clear whether ORD as a whole sees itself as a "user helper" or not. In any case, the Division does not have the resources to be a "user helper" beyond individual, informal cases.	It is clear that there is some concern in SRS to provide user-helping services to various groups. The new Office of Organizational Development will promote such capacity building among federal users in SRS. The RUS's, the RUL's, and the RRRI's have some responsibilities to assist users in this manner at the state level by means of their consultative efforts and personal contacts. RUB does not have a major responsibility for this function and, given limited resources, expansion in this area is not likely. The role of RUB in this effort presently is more that of a linker to the various attempts that are occurring now to help users on a decentralized basis.

Although much of the work involved in field consultation visits to mental health centers relates to administrative activities, e.g., monitoring, MHSV and Regional Office staff also attempt to provide technical assistance to the centers during these visits. The Children's Mental Health Task Force is aimed at improving the knowledge for technical assistance on the part of NIMH and regional consultants, and a portion of the Human Interaction Research Institute project will be designed as a training project to enhance Branch staff members' skills in consultation to promote change.

The Branch has funded a few training grants, and in one instance a training grant was used to fund a study on the training of mental health personnel in the use of operations research techniques. Staff in the Children's Mental Health area are setting up local training institutes within centers with model programs and are bringing in regional people. This effort was cited as the first Branch endeavor in the use of researchers and staff as a cadre to work with users; however, it was not known whether the Branch would develop this activity on a systematic basis.

Manuals developed by MHSV on how to use information and on how to plan for creative change are designed to help users.

Corporation to evaluate the "quality" of various ERIC publications. One respondent felt that ERIC was trying to find out about user needs by packaging the material in the best way that they know how to (based on D&U literature, etc.) and then learning from the reactions, repackaging, learning more, etc., in a continuous cycle.

There are attempts to make sure that the dissemination efforts of NCEC are working through an independent validation process included in the Operational Planning System. For example, in the Exemplary Program Series, an RFP is issued for a validation contract; collaborative criteria development is done with the substantive Bureau involved; NCEC checks to see if the criteria is being applied rigorously enough; and finally, the program is reviewed by an OE-wide dissemination board.

In the Bureau of Adult Vocational-Technical Education, two studies done by outsiders were designed to evaluate the RCU's operations over the last seven years in terms of how well they have met their objectives.

"Developmental assistance" to local educational practitioners is a primary goal of the extension system. Agents of the system are supposed to engage in problem diagnosis as well as knowledge linking and follow-up activities to help clients along toward the adoption and implementation of innovations and the utilization of research. The extension agents have held formal conferences to make people aware of information as well as workshops and consultation activities to go beyond just awareness. The local information centers, dissemination representatives, and the demonstration-visitor center sites are also part of the "national linking system" of NCEC to provide technical assistance in planning and implementation of problem-solving efforts. Technical consultant services and training sessions are also utilized as channels between users and researchers.

In assisting other organizations in setting up their own information centers, ERC staff hope to provide consultation and training; staff members from other centers have been trained to negotiate questions and to provide help. As part of its Exemplary Programs and Practices Program, NCEC has also sponsored "installation" projects which include such features as demonstration centers or training places where local school people

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will have better access to information. Last year, as a beginning, special installation subsidies were given to support installation of three innovations: the Mini-Course, the Multi-Unit Schools, and the SWERL reading materials; there will be a few more funded this year.

The Educational Products Display is a traveling exhibit of ten research-based, commercially-produced products which is taken to about 20 or 30 sites a year. The exhibits include audio-visual displays and other products which tie into the priority areas of OE. An array of alternatives are accompanied by R&D Lab and center consultants to help users decide which products could best serve as solutions to their particular needs. In "pushing" educational products or innovations, staff members train educators to use the products. Publishers working through the Copyright Program often demonstrate their products at conventions and send salesmen out to install the products. NCEC project officers also provide developmental assistance to the project in terms of "technical advice" to project officers.

One of the unresolved issues concerning the extension system centers around how to train agents to be technically proficient demonstrators and installers for a large number of products; bringing in consultants and holding user conferences have been considered, but there are problems of funding and overload of information associated with those ideas.

In BESE, program support packages have been developed that include visuals, handbooks, and documents regarding guidelines. The "Awareness Sessions" and "Adoption Clinics" of the Education Fair are designed to bring potential adopters and producers of innovations together; staff members will follow up by assisting the states with dissemination activities of their own. BESE "leases adoptions" through providing money to local demonstrations, bringing potential adopters to the demonstration sites, putting users in contact with peers who may provide assistance, and then offering a relationship in which interested people can get technical assistance for installation efforts.

One non-NCEC respondent expressed the view that presently there are no rewards for local school systems to accept innovations and there is a lack of financial means for the adoption of new changes. Additionally, although outside pressures for school improvements may allow a climate in which R&D products can be marketed, these pressures also act as inhibitors since there may be built-in resistance to change.

Function Set #5: MICROSYSTEM BUILDING

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
5.10 Interchange The maximal D&U system sets up many types of situations in which users of all types (policy, practice, consumers) can enter into immediate face-to-face dialogue with R&D personnel. These situations are distinct from meetings set up for reporting by researchers to a special audience which would have the purpose of dissemination.	One of the earliest models assumed by the Division and others in ORD, and emphasized since, was that of setting up a system of interchange between researchers and potential users, as well as staff of the R&D program. Originally, such interchange sessions were organized on a formal basis: two committees were set up, with one containing USES, BAT, OMR, and other staff. Such meetings were carried out to promote face-to-face dialogue. However, these interchange sessions are now conducted on a less formal basis. Seminars with researchers and staff of the M.A. were also conducted for a time as a source of in-service training; these sessions also served as a source of interchange. The purpose of this interchange model has expanded over time to include encouragement of active adoption as well as dissemination. Another medium sometimes used for this strategy has been conferences. To insure that interchange actually will occur and not just "reporting" by researchers, briefings and other materials are sent to participants before the conferences, and pre-conference meetings are held to discuss information needs of the participants and other strategies. Examples of such planning include the WIN Conference conducted by the Brookings Institute and a series of sessions on the "manpower needs for national goals of the 70's."	Although not necessarily the responsibility of RUB, there are present or potential sources for interchange among R&D personnel and program people. Through the various in-house task forces and committees, discussion and exchange of information could service both staff groups. The new management process in which "teams" of program and ORD personnel design the research program could also serve as a source of interchange. However, there may be danger of this procedure not providing useful dialogue, but instead becoming a formality--success may depend on the openness of those involved. RUB has been experimenting with the use of researchers "on-demand and on-call," a technique adopted from the "Visiting Psychologist" program of APA. They have funded the University of Wisconsin RRRI to provide consultative services to the state Departments of Vocational Rehabilitation. Some conferences planned by RUB may also provide a source of interchange, though only on an occasional basis. Examples of such conferences that go beyond dissemination of specific project results would be those with a research utilization focus. Some of the RU Specialists have conducted RU conferences in their designated regions.
5.20 User-Collaborative R&D The maximal D&U system sponsors some projects in which users and R&D persons work as colleagues in all phases of problem-solving on a particular user need area. The situation in which the R&D person is himself a potential user is a special case of this user-collaborative R&D. (This special case could also be subsumed under "User Self-Servicing," Function Set #1.)	The Division and other ORD staff members have consciously used this strategy. In the Division's model of "projects as disseminators," user involvement is encouraged through the requirement that utilization concerns be incorporated into the early stages of projects. Projects which focus on particular need areas have been designed to insure user participation in the development and funding of the project. For example, in a study contracted to the Battelle Memorial Institute on training needs of three Michigan cities, various users were involved in project development: USES, vocational educators, the Governor's Office, and HEW.	The special case of the researcher himself as a potential user is important in the R&D programs of SRS. It was felt that when users in the states perform the projects themselves, they are much more likely to adopt the useful findings. The example cited was the Section 1115 demonstration program of ORD, in which single service state agencies can be the only recipients of the awards. By the time the project has ended, it was believed that useful project results have already been incorporated into the state programs.

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Traditionally, the MHSV has assumed that the researchers themselves should have a primary role in D&U efforts. In a few cases, to encourage the researchers to do so, they have funded grantees to hold special conferences on their projects and also to provide consultation to potential users in order to provide a source of interchange. It was noted that a few projects have been funded in which researchers have set up training seminars or workshops on administrative and service concerns of the mental health centers. However, with the limited funds for encouraging this type of activity, the Branch has not been able to develop the full potential of these interchange situations. Within the Center for Studies of Crime and Delinquency, interest was noted in promoting interchange between researchers and practitioners through the use of funding for consultant-type services.

Grants which the MHSV sponsor are split between those to center-type researchers (i.e., mental health service personnel) and university-affiliated researchers. Among the former type, there have been projects in which the producer-user has developed specific techniques and has spread such techniques to other potential users. For example, in a project conducted by a Minnesota mental health center, a goal attainment scaling instrument was developed. The project staff are promoting this scaling device themselves through the development of manuals and the establishment of a network for subscriptions and monthly reports on scaling. An example of

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NCEC generally appears to have little direct involvement in microsystem building between researchers as a whole and practitioners throughout the educational establishment. This is understandable, given the size of the system, the limitations on the assigned mission of NCEC, and the origin of NCEC as a print-based research information collecting and disseminating agency.

NCEC does not promote interchange as a matter of direct and deliberate policy. On the other hand, it is undoubtedly true that the ERIC Clearinghouses, through their involvement in professional associations, do bring about many exchanges between persons who can be defined as primarily "researchers" and others who could be defined as primarily "practitioners."

The function of interchange is undoubtedly carried out within many Divisions of USOE via special conferences and consultations. No attempt could be made in our study to enumerate or assess these many activities.

Within NCEC user-collaborative R&D is carried out through the Targetted Communications Program. Researchers who apply for these small contracts ($40,000-$50,000) are supposed to involve users directly in forming specifications for the interpretation of and in shaping their final product via small conferences, consultations, or other means.

Outside NCEC we are sure that many user-collaborative R&D projects are carried on although we were unable to evaluate them. For example, many regional Laboratories and R&D Centers have over the years established

The Division and other ORD staff have funded potential users themselves to manage projects and disseminate results. An example would be the work contracted to the National Civil Service League (NCSL), a potential user organization of its own results. NCSL has developed a new model of civil service law with guidelines that could be used by local or state public agencies to enable them to hire large numbers of unemployed, disadvantaged people should funds become available. When the Emergency Employment Act (EEA) was passed, this topic became a relevant area of need, and NCSL provided needed guidelines for the EEA staff. A need for a study such as the Work Sample Project was indicated by an in-house committee. This Work Sample Project was originally installed as an adjunct to the Philadelphia Employment Service Office and was monitored jointly by USES and what is now ORD. The model was then used on a much wider basis by USES.

An earlier means to encourage user-collaborative R&D was the establishment of the E&D unit in USES from 1966-1968; the unit collaborated with the E&D program within OSMP (now ORD). However, this unit in USES no longer exists.

The RU Specialists have also been involved in collaborative efforts. For example, results of a project on the deaf were used by the RU Specialists and three state-level staff to plan small, user-oriented conferences at the state and local level.

5.30 Integrated RDD&U Program

The maximal D&U system sponsors programs in high need priority areas in which the full cycle of problem-solving from need to integration of solutions is planned, organized, and arranged to insure both relevant R&D and utilization. This does not necessarily mean that one project or one project director must encompass this whole cycle; rather, it can occur over time in a series of projects.

The Experimental Manpower Laboratories are examples of such an integrated program. The Labs are apparently set up in priority areas of need, such as training for the disadvantaged, rehabilitation of offenders, etc. Such Labs look diagnostically at problems and design, experiment with, and test new techniques in an operational setting. The Laboratories also build on knowledge developed from earlier projects. Results of the numerous experiments are promulgated by the various Labs by means of publications, conferences, newsletters, etc. and can be adopted for use in the larger manpower system.

The "buddy system" could also be a mechanism for this, assuming that the topics of research can be influenced by this system, that the researcher is involved via the "buddy system" until his project is utilized, and that in the "buddy system" there is some recall or feedback when necessary from previous projects monitored by the "buddy" and the project officer. Although not always through the "buddy system," some Division staff members use their knowledge of substantive problem areas to integrate R,D, D&U efforts.

Perhaps the best example of this type of effort can be seen in the program of Public Assistance in Vocational Rehabilitation (PAVR), in which projects completed over several years were picked up and integrated with new program planning, involving the users of many different levels in the planning and utilization as the new program developed. The Administration has been concerned with rehabilitation of the public welfare recipient for several years. This priority area was allocated expansion funds of $26 million, given the success of earlier demonstration projects. RUB then took the initiative and involved staff in RSA, the RU Specialists, and one of the RU Labs in several stages of program planning: the RU Lab in New York (ICD) did some field engineering and developed a topic-centered clearinghouse in this area on rehabilitation of the welfare recipients; these groups were involved in a workshop to develop training guides regarding the servicing of this new client group; a national conference was held last fall to disseminate the training material.

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a collaborative type of project involving the latter type of grantee is the project recently initiated which will be conducted by the American Institutes for Research in collaboration with the National Council of Community Mental Health Centers. This project is designed to match solutions to problems which have been identified by the Centers through their National Council.	a network of contacts with practitioners in their localities. In varying degrees, depending on the user-orientation of Lab or Center management, these practitioners are invited to participate in the planning and development of products and the conduct of research even though there is no particular official sanction or reward from Washington for doing so.
The entire MHSV Branch is set up to integrate RDD&U around particular problem areas. These problem areas were originally selected in-house, with the three-phased R&D process used to promote the quality of service in each of these problem areas: 1) identification of need and problems for change in services; 2) search and research to provide direction for effective change to solve problems and meet needs; 3) promotion of diffusion and adoption of innovations through planned change. Thus, RDD&U are encouraged around each problem and priority area of the Branch. One staff member noted his change in orientation from concern over how research ideas could be "marketed" to a new approach: "let's go out and see what the problems are, who needs help in changing, and then look back and see what research is necessary." Some of the Centers in the Division of Special Mental Health Programs also have been set up around high priority areas, with combinations of research, training, and sometimes services all focused on the priority concern.	The middle 1960's saw an evolution in the USOE's understanding of the need for integrated RDD&U. However, this evolution of understanding has occurred in that order, i.e., from an initial concern for *Research* in quantity and quality to an awareness of the need for *Development* as a separate activity building on research, to *Dissemination* as an activity of national distribution of the output of R&D. Now, gradually there seems to be increasing recognition that even dissemination is inadequate and that users need help in adapting, installing, and integrating R&D products in their every-day work. With this increasing awareness, the role of NCEC has become more salient in the thinking of OE planners and policy makers. Thus, for example, they have become increasingly involved in assisting Regional Laboratories in the diffusion phase of large scale development programs such as the Far West Lab's Mini-Courses.

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	The concept of "spin-off" from one project to larger programs or other R&D is recognized throughout the R&D program. An example which follows this function is the Inmate Training Program. This program originated in a series of E&D projects in the area of corrections and inmate training. The findings were passed through a "policy development process": many practitioners were involved in the development of the program (staff in corrections, employment service staff, etc.), legislation was proposed and secured, and a training program was launched as a result of "conscious decisions based on policy papers that had been developed."	Other projects such as the RU Laboratory in the Chicago Jewish Vocational Service (JVS), also center their efforts around an integrated program with a specific topic focus. The JVS has conducted a whole range of activities, from surveying needs to replicating projects over time.

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However, the most salient example of the integrated RDD&U programs appears to be in the MSHV efforts that are directed towards the children's area priority. Efforts have included the development of a "cadre" of in-house experts in this area, with the cadre broken down into 3 operating sub-committees: 1) one sub-committee is developing a list of needs and program emphases for this area; 2) one sub-committee is developing models with which to coordinate consultation to the field and also is outlining resources within NIMH and other agencies which are available to the regions and others; 3) one sub-committee is actually working on the development of children's programs. Also in the children's mental health area, some local training institutes have been set up in centers with model programs, with these workshops being "how-to-do-it" oriented. These efforts are not based on single programs or pieces of research, but rather are based on a combination of research, demonstration, and even service programs. One staff member of the Branch noted that this effort in the children's area has been the most well planned and "catholic" effort designed by the Branch.

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In spite of increasing involvement, however, NCEC is still not involved in the *initiation* of concentrated R&D program thrusts; however, the word "integrated" may be misleading. Generally, NCEC begins involvement in the RDD&U sequence after it has reached some form of "product" status and long after the basic research and need definitional activity has taken place.

Function Set #6:
MACROSYSTEM BUILDING

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
6.10 Macrosystem Modelling The maximal D&U system should have a coherent and consensual image of the evolving macrosystem so that gaps and points of need can be identified and monitored.	Images of the systemic framework within which ORD and the Division are placed are seldom made explicit. Organizational charts are not in evidence, and the notion of a system of delivery of manpower services, either nationally or locally, is not always detailed. Hence, it is difficult to pinpoint weaknesses in the chain of communication, service delivery, or need expression. Some difficulty arises from the relatively young discipline of "manpower" itself, which has grown primarily in the 1960's: "everybody is a self made expert from various backgrounds." Nonetheless, it is clear that thought is given to this and that there is some concern over modelling. In a memo dated 1969, the Division Chief stated: "...the utilization function...must be seen as a system, and must be organized so that it functions as a system... The full goal is a manpower system...which is continually absorbing and using new ideas, new techniques, new forms of organization, new ways of delivering services." The Division Chief has also promoted contacts among the D&U staffs of various agencies to "see where utilization fits into the total system."	Although RUB has had no formal jurisdiction to utilize findings from all the research programs in SRS, it has been working toward the development of an SRS-wide utilization system. RUB has proposed a study to design such a system and has been working via task forces and in-house written materials to promote this idea.* However, one of the problems in the agency has been the lack of a common perception of the system. The various bureaus and research programs have been based on different legislative authorizations and the formerly separate programs have traditionally had their own constituencies, their own funds, and their own modes of operating. Various offices other than RUB have been working to develop a coherent image of the agency. The new management process, involving both bureaus and research staff in defining and carrying out agency objectives, may be a means to define the system. The action of the Office of the Secretary in withholding funds for a time from portions of the research program may have also been intended to force awareness of the common operating grounds among research programs and bureaus.
6.20 Macrosystem Monitoring The maximal D&U system should be in a position to monitor for the macrosystem, i.e., to funnel the streams of "social indicator" data which assess the current health of the system and the changing needs and problems of users.	This is not the responsibility of the Division. Rather, staff in ORD, OPE, and higher levels of the organization have responsibilities to keep attuned to such data and relay this data to key policy makers. Use is made of program evaluation reports and "external facts," e.g., demographic projections, unemployment rates, etc., to monitor the health of the manpower system.	No activities focused directly on this.

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*Grant awarded to the Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, University of Michigan in June, 1972.

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There appears to be no central focus in NIMH for this macrosystem building, and this task would appear to be difficult. There are many "sub-systems" in NIMH which are organized independently around specific research or problem areas. For example, the Centers in the Division of Special Mental Health Programs are focused on priority areas (e.g., drugs, crime, etc.), and they promote some system building around these problem areas. However, these sub-systems do not appear to be integrated, and this would appear to work against the development of an agency-wide D&U system. There has been some movement toward macrosystem building in certain areas: the development of an NIMH-wide evaluation system; the promotion of joint funding across the agency and outside; efforts to coordinate behavioral science activities that cut across Branch and Division boundaries and disciplines. However, these activities are not in the area of D&U and there is a tendency for the units to do whatever they can. One respondent stated that his unit didn't have the mechanism to do the job of D&U, but "if we don't assure that this will be done, who else is going to?" Thus, there is no way of assessing the gaps in present D&U activities or where the greatest needs in the system may be.*

As MHSV lacks adequate knowledge about what is going on in the rest of the system, the Branch is not in a position to be able to monitor for the macrosystem. However, as in the larger MHS Division, center site visits are utilized to identify problem areas. It was felt that these problems should be fed into the knowledge base because the information may be helpful not only in working with other centers, but also in modifying the definition of their program.

There is an NIMH in-house study being conducted to assess the research programs of the Institute, i.e., what they have done, where they should be going.

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USOE strives mightily for a coherent image of itself within an educational macrosystem through the exhaustive policy and program planning process which each unit must participate in. In spite of these efforts, there is some doubt that such an image emerges and more doubt that it is consensual. Respondents (outside NCEC) cited various inhibiting factors: e.g., diverse sources of legislation for programs in OE leads to many duplicating efforts; one informant claimed that there is a "non-strategy in OE for bringing about improvement in education"; although most of OE and the United States think in terms of the teacher as an individual entrepreneur, researchers talk about building instructional systems. One observer noted that information about what other Bureaus are doing is communicated on an informal basis: "What we don't have is a program in which we could spend money to reach users; if we would try it, we'd be told that it belongs in NCEC." The fact that there are so many programs in OE and that in the past it has been difficult for the Commissioner's Office to keep control of anything was cited as another inhibiting factor. NCEC staff felt that an identification of the elements in government relating to D&U is very important.

As noted earlier under Section 4.22b and elsewhere, NCEC is currently sponsoring two pilot projects related to monitoring at Michigan and Stanford. These projects may additionally lead to some sort of special macrosystem monitoring process, but none exists at the present time.

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*A Study Group on utilization and linkage concerns within NIMH was organized after our interviewing stage; this Task Force also holds much promise in terms of macrosystem monitoring at the Institute level.

6.30 Promoter of Linkage

The maximal D&U system could see itself as a promoter of linkage generally within the macrosystem and also between macrosystems in different need areas.

6.40 Filling Recognized Gaps

This function for the maximal D&U system involves filling recognized gaps with new roles or organizational forms for D&U activities.

The development of informal linkages within the Manpower Administration has been a guiding principle of the staff within the Division. The use of the "buddy system," the development of informal contacts with users, and the staff members' roles as catalysts in linking others all confirm the importance of this principle. Nor have Division staff members limited their role as linkers to those within the M.A. Some staff have invested a great deal of time in developing linkages with staff in other agencies, e.g., vocational educators and vocational rehabilitators within the Department of Health, Education, and Welfare. The Division Chief has attempted to maintain ties with D&U staff in other agencies and was one of the founders of the Inter-Agency Seminar Group formed to consider utilization issues. Other staff within ORD have also noted the importance of linkages. As one respondent stated, utilization requires "a whole series of interfaces" among federal offices, regional offices, state offices, and other federal agencies. One important means cited by an ORD staff member in developing linkages between the macrosystems was through joint funding of projects.

In its work, RUB has stressed the importance of building networks and has served as a catalyst in many of these efforts: it sponsored the RU Specialists to establish linkages at the state level; it has linked some of the RSA staff, one of the RU Labs, and the RU Specialists together in their joint work on the PAVR program; it has linked researcher-consultants to the state practitioners through funding. All this activity was encouraged under the assumption that RUB, given its small staff, cannot and would not accomplish this task alone or directly.

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Staff members interviewed noted that the channels among the various research programs in NIMH are not well developed. Most of the linkage activities are conducted informally or on an individual unit basis, e.g., the linkages of most unit staffs to professionals and researchers in their particular areas. There were some respondents who noted the "insularity" of professions even within NIMH, with staff experts in a particular area having closer channels to other researchers in their special field than with staff in other portions of the Institute. "Sometimes you find out what others are doing in NIMH by reading it in the morning paper." There were efforts cited to tie in the various research units and areas. For example, a "social change" seminar has been set up by staff in the Director's Office to provide a channel for exchange between in-house staff from various units as well as with researchers brought in for the seminar.

There also have been efforts to develop "cross breeding" among federal agencies. For example, inter-agency groups have been set up in the area of crime and delinquency and these groups are designed to open channels among the agencies as well as to promote and plan for joint funding of projects. In the NIMH Director's Office, there are some staff members who have links to other agencies that would not be appropriate for any particular Division. Yet the assurance for these linkages appears to be only through the research programs and units supported by NIMH, i.e., if there is a research program in psycho-pharmacology, there will be linkages to that field of research. Through this ad hoc type of linkage system, however, there may be certain audiences which will not be hooked up to the system through oversight.

Interpersonal contacts with practitioners probably carry such a linkage promotion component. On a different level, participation in the continuing inter-agency D&U seminar group serves to generate awareness of a cross-agency concern with D&U.

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One of the objectives of NCEC is linking at various government levels to build a D&U network: "What we're about is trying to develop a network" by finding out what the relationships are between the three levels of government (federal, state, local) and how a D&U system can be operated. The role of the federal government in such a system was seen as to provide seed money and a certain amount of program expertise via specifications, monitoring assistance, etc., and also to build a knowledge base. A major development for NCEC has been the work done on the Pilot States Dissemination program with the installation of field agents and information specialists at the state and local level. The concept of the extension agent has been expanded to include resource linking activity and follow-up activity to help clients along toward the adoption of innovations. The assumptions behind setting up these model pilots is that information of a certain quality and recency is needed by practitioners to make decisions, that printed information is not sufficient and that interpersonal contact is needed.

In addition to the pilot states, NCEC has funded state and local information centers and the National Secretariat Project, in which meetings are convened with the 50 dissemination-liaison people in an effort to establish this network of linkage. The Extension Support Branch is involved in a longer-term development, e.g., extension system, networking idea of strengthening state agencies so they become more active in the dissemination field, etc. One of the objectives of the extension agent system is the establishment of liaison and working relationships with all of the clients in the assigned target population.

An in-house project concerns the setting up of a program to collect information about promising educational practices on a national basis; this has been done in collaboration with state agencies. By next year, NCEC plans to provide phased support for the development of information service centers in every state agency, ranging from design studies in states with low levels of readiness to operational support in states with relatively mature capabilities. Such units would have the capacity for using the ERIC system and might also have linkages to the Regional Laboratories. One of the factors affecting the shift to greater use of ERIC products by

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	The Division has not concentrated its efforts in this area due to philosophical reasons and lack of resources. The staff members have stressed informal contacts, and some members questioned the utility of developing formal linking roles: "Do you build a formal network or an informal network of people who really care?" "Are linkers made or born?" However, some in-house efforts have been made to fill gaps and prevent slippage in the system: the Division has been developing checklists for documentation and guidelines to define who does what in the system; staff members in the Division have been assigned to develop some means for communication with the regional offices; staff in ASPER have instituted the Advanced Research Briefs to fill gaps in links to policy makers.	Within the limits of its funding base, RUB has worked to fill several perceived gaps in the knowledge flow system. To reach practitioners RUB felt it was necessary to move out of the centralized R,D,&D model which characterizes the traditional dissemination acts of the federal bureaucracy and move toward a centralized linkage model. To reach the local and state levels more effectively, the 9 RU Specialists were funded and established in 9 state agencies. It is not certain, however, on what basis this gap was identified, and whether RUB has any standard sensing procedures for identifying gaps beyond that management process recently initiated at the federal level.
6.50 System Awareness Building The maximal D&U system could serve the function of generating awareness of system members of themselves as part of a system.	Historically, there have been some difficulties in building system awareness within the Manpower Administration. The "birth" of the Manpower Administration has been relatively recent (the early 1960's), and initially parts of the system, e.g., USES, were regarded as "separate entities." "Bureaucratic jealousies" and differences in outlook among staff have also been cited as barriers. However, some respondents noted that through various attempts, the Manpower Administration has become more "closely woven together." Committees were established to involve both research staff and operating staff in the R&D program and informal, interpersonal contacts have been developed to weld relationships. The Division has encouraged awareness of the utilization system through the "buddy system" and other personal contacts.	RUB has not had the responsibility for generating broad awareness among SRS-relevant practitioners, researchers, clients, or civil servants that they are part of a system. Although no unit has been assigned exclusive responsibility for this function, it appears that the new management procedures may be directed at system building. The action of the Office of the Secretary may have also been attempting to generate system awareness. However, from interviews it was apparent that there were still some problems in generating this awareness. Some mentioned that they were still trying to make the reorganization of 1967 "gel." Others commented on the disparity of the various programs: "the bureaus are almost separate departments in many senses." These problems only highlight the necessity for fulfilling this function of generating

There has been no NIMH-wide effort in this area. NIMH has attempted to fill recognized gaps on a project basis in a few cases, e.g., funding for demonstration project officers or action consultants to provide a link where none may usually exist, but this effort has not been picked up systematically. There is no formal extension system supported by NIMH, no network of linking roles, and no D&U laboratories.

The responsibility for system awareness building does not lie within any of the Divisions; rather, the occasional efforts that have occurred appear to be initiated by some of the Offices, which have responsibilities for overall NIMH administration. For example, the aforementioned seminar on social change to bring NIMH staff together from different Divisions and to increase "intellectual discussion" among various staffs of NIMH has been conducted by a staff member in the NIMH Director's Office. However, given the diversity of research sponsored by NIMH, ranging from very basic to very applied, it would appear that more efforts in this area are needed to promote the idea of a macro-system which encompasses the different sub-systems of research.

states and locals was said to be the state and local information centers already established in a number of places with support from Title III funds from the Education Act of 1965. One of the functions of ERC is to serve as an administrative center and to aid in setting up various information centers across the country.

Outside NCEC, the Research Coordinating Units (RCU's) of the Bureau of Adult Vocational-Technical Education probably represent the clearest example of a policy of linking and gap-filling. RCU's are supposed to "get the results of research into the hands of people in the local districts," operating as a national network which includes their own ERIC Clearinghouse, and linkage to the ERIC system.

NCEC has no assigned responsibility to make educators, researchers, and government officials more aware of each other as parts of a system although it may eventually turn out that a successful national extension service may do just that.

Within OE, some informants felt that they were already seeing changes toward greater awareness of interdependencies, this trend being exemplified by more staff meetings within NCEC and, at a higher level, more open access to the commissioners. An in-house newsletter titled Development is now circulated regularly to OE staff. Each of these developments, while relatively trivial in and of themselves, should add up to an atmosphere of mutual awareness and togetherness which is probably essential for a healthy organization.

Maximal D&U System	*M.A. Division of R&D Utilization*	*SRS Research Utilization Branch*
		system awareness. Among researchers, practitioners, and clients the system-awareness problem is even more acute. The truth is that the term "SRS" as a collective enterprise means almost nothing even to those people most closely involved in and affected by its activities.

NIMH Mental Health Services Development Branch

OE National Center for Educational Communication

It was clear, however, that other informants had an opposite impression of current trends. One respondent said: "There's a business orientation, i.e., everyone for himself. This selfish operation is not good for government." The problem with OE was seen as one of a non-strategy for bringing about improvement of education: "you've got 70 some pieces of legislation in OE, 200 some programs with most of this money formula money, but what you don't have is several billion dollars for pushing the products of OE and training people to use these products." Another non-NCEC observer felt that there was a change for the worse in OE's management problems due to the present administrative policies, and that the atmosphere is much more "closed and paranoid" than it used to be; this attitude was felt to be government-wide. Because researchers talk about building systems and most of OE and the U.S. think in terms of individual entrepreneurs, one respondent suggested that a change in the philosophy of the U.S. and OE, i.e., to thinking of systems, was necessary in order for research to be used.

CHAPTER V

PILOT SURVEYS OF LINKAGE

I. INTRODUCTION

In the work reported so far we have produced descriptions of the structure and process of D&U units and activities seen from within, from the perspective of the agency staff member. Obviously, however, D&U by its very nature involves many important groups outside of the agency. Only through careful assessment of the non-agency suppliers and consumers of knowledge can any D&U program be fully described and evaluated. Our primary point in the model presented earlier is that D&U must be seen from a systemic viewpoint, one which accounts for both the linkages between groups, and constraints, capacities, and needs within these same groups.

Thus, because of the limited ability of any group to describe accurately the entirety of their loosely-connected system, and because we need exactly such descriptions to derive an accurate picture of D&U, we moved outside of the agencies to conduct pilot studies of system-wide linkage, using two of the four agencies. Part of our intent was to produce data which would converge upon those reported above, while at the same time expanding our knowledge beyond the agency setting. In addition, we were interested in developing a methodology which, if and when validated, could be utilized by agencies (or its perspectives incorporated into other data gathering efforts) so that the D&U system might achieve a greater capacity for macro-system monitoring. Such a methodology could also be used to gather base-line data against which change efforts might be evaluated.

An effective monitoring device must meet three criteria. It must:

(1) provide valid and reliable data on actual linkages within and across groups, considering needs, channels, content, and uses of information sent and received;

(2) provide data on attitudes in all parts of the system regarding the D&U process in general, and specific products and processes in particular;

(3) be cost-effective, giving the maximum amount of data for the least cost in dollars, administrative and analysis time, respondent effort, and translation effort required to convert findings into implementable actions.*

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* We should note that this is an ultimate objective which may be reached only through successive approximations, partly because we can only learn what data are required, and how to gather them, by actually going through the whole process. As an example, the now standardized surveys of organizational behavior, intelligence tests, etc., all went through many years of theoretical and empirical refinement. D&U research is just beginning this process.

The primary concern of understanding linkage is parallel to, but not identical with the D&U model presented in Chapter III. Our concern here is more "micro": we are interested in mapping specific communication behaviors following the familiar paradigm of "Who says What to Whom through which Channels with what Effect." This more basic approach will provide data which may then, in analysis, be aggregrated to assess the communication of any content (e.g., need expression, solutions delivered, policy-relevant information), within or across any groups (e.g., from practitioner to researcher or vice versa). The model used here is descriptive rather than prescriptive; we are searching for data which may be related to, or serve as tests of, the comments typical to Chapter IV such as "maximal activity" or "insufficient contact." When micro-level analyses of existing linkage are available, they serve as a tool within the broader D&U model to help us determine areas for change in the form of increased activity, more transfer, etc. Such data then may be collected again to get some idea of the effects of changes.

Our second criterion was for data on attitudes regarding the D&U process, and on information needs. In part we are interested in the evaluation the person gives to his communicating or linking behavior, or that of others: is there enough or too much of some content coming from or going to another person or group? Are the media the right ones? What is the level of satisfaction with effects? Seen this way, our more familiar concept of "information needs" becomes only one pole of the evaluation of content (since we assume usually--and often uncritically-that most needs will be for more, rather than less, information).

A second aspect of the evaluative dimension, that of D&U in general, develops from our desire to build and test theory of the process. Here we are asking for evaluations of concepts our models claim are important or are related. Such evaluations may also be used to provide insight on those aspects of D&U deemed important in different parts of the system.

The third criterion applies to the "best" way to meet the first two criteria. Decisions, however, must be made only after consideration of specific methodologies for assessing concepts at different possible levels, or from different "units of analysis." This point needs expansion for clarity.

There are several alternative approaches which might be used to assess linkage in a D&U system, varying both on the methodology used and on the unit of analysis studied. Ultimately, many or all possible combinations should be tested (as was done for the field of educational needs assessment by Mick, et.al., 1972). The task grows as a function of the number of combinations of alternatives for methods and units of analysis (assuming we are studying the same concepts at the same times). For example:

		Methods:		
		Surveys, e.g., questionnaire or interview	Process monitoring	Unobtrusive measures or secondary analysis
Units of Analysis:	Individuals			
	Groups			
	Communicative acts			

This table is an example, by no means exhaustive of the possible approaches, and yet it gives nine potential studies to be conducted and compared (though some may be, a priori, meaningless or impossible).

Fortunately, criterion three (cost effectiveness and effort) comes to our rescue here. We are looking not for the best of all possible methods, but for the practicable ones which will provide the best assessment of the several linkage and attitudinal indicators required.

In making decisions regarding the present project, our calculus of methods and units resulted in the adoption of mail questionnaires to collect data from individuals representing most of the major groups in the D&U system. We could aggregate data from individuals to groups in our analysis, and ask questions of individuals about typical or important communicative acts; thus, we could approach (though not duplicate) other levels of analysis. This choice is a typical resolution to such problems, since using groups as the only unit of analysis would ignore important individual differences in information processing and necessitate direct observation. Strict use of acts of communication as units involves development of markers or tracers on acts, and could not give us attitudinal information except by special measurement of the individuals at each "end" of the act.

Our desire to produce an inexpensive method, once we had decided on individual units, was the primary reason for settling on self-administered (mailed) questionnaire methodology. We balanced the knowledge that such surveys have given adequate response rates in the past from well-educated and committed respondents with the realization that time pressures on busy people might interfere. In addition, the method, if it could demonstrate its utility, would be one which could be repeated easily by D&U workers in the future.

II. METHODOLOGY

The studies described here were performed for only two of the four agencies, Manpower Administration and Social and Rehabilitation Service.

This reduction from our original design was necessary once we discovered the amount of time and effort required to complete the four case studies and to develop the model. Our choice of agencies resulted in part from the order in which the case studies were done (MA, then SRS, NIMH, and OE), which allowed the pilot studies for the selected agencies to be implemented earlier. The exclusion of OE is perhaps fortunate in the sense that the agency was undergoing the transition to its present divided structure, so that linkages were not stable. NIMH and (now) NIE may benefit from their exclusion, since we will propose below to apply a revised and refined version of the approach for these agencies. (At this writing a proposal to this effect has been submitted to NIMH). All four agencies agreed to our request to limit this analysis to the two selected.

A. THE INSTRUMENT

We have already presented the basics of the linkage model used here, and the outlines of attitudinal information desired. These areas are covered in the questionnaire (see Appendix A), together with two more specific lines of questioning covering how information flows during "crisis" situations, and unmet information needs. Job and demographic data were also collected.

1. Information Sent and Received

Linkage items in this study were finally assessed by asking for the two persons, groups, or organizations to whom the respondent sent important information, and the two from whom important information was received. The exact form of the questions was selected after a pre-test which showed us that it was unrealistic to expect respondents to evaluate their contacts with all of the groups we specified.* The alternative of asking respondents to mention specific important communications in some time frame which was adopted here no doubt underestimates rare but important communication which may not come easily to mind. The implication of our approach is that the "linkage maps" we will produce do not represent amounts of communication between and within groups, but rather show the evaluation of important linkage. Adequate mapping of absolute levels, as well as evaluations, must await future research. In summary, the approach we used separates important information from the total information sent and received, but it does not tell us how much of the latter there is.

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* A pre-test of a longer, more detailed instrument was conducted in June, 1972, at a New York meeting of SRS Research Utilization Specialists. In effect, respondents were faced with the chore of completing a matrix of content, media, frequency, and uses of communication with all other groups. This proved much too demanding. Marginal comments on this and other points were used to refine the ultimate instrument. Several pre-test respondents were also included in the SRS name list. We utilized the pre-test responses for these individuals, recoding them to fit the revised questionnaire.

For each of the two groups which respondents mentioned as providing important information, we gathered data on type (content), frequency, media, and uses of information. Similar questions were asked about important information sent, except that "uses" referred to how the respondent thought his audience utilized the information sent to them. Since we had asked for important information, we did not add an evaluative component.*

2. Unmet Information Needs

A section on unmet information needs does approach an evaluative component. In this section we also asked, in addition to content, preferred media, sources, and uses for which information was needed.

3. Information in Crisis Situations

Questions on crisis situations were added as a result of several discussions with agency staff during the case study interviewing and feedback. Many staff members expressed the view that government often operates by "crisis management"; during crisis periods information flow and use may be different from less hectic periods. Again, content, sources, media, and uses were assessed. In addition we asked the respondent to define a recent crisis. We also asked for ratings of needs for information from within and from outside the work organization, success rates, problems encountered in getting information, and suggestions to insure better information flow in similar crises.

4. Improving Utilization and Attitudes on Utilization Strategies

Attitudinal data were gathered through one broad question on the most effective ways to insure utilization, and by the rated importance given several different statements about D&U; we also asked for ratings on the extent to which each statement was actually exemplified in the respondent's area of work. The rating statements were derived from earlier work, and typified the approaches contained in the contrasting models of D&U identified by Havelock (1969) in his search of the existing literature on D&U. Both of the evaluative dimensions will be analyzed in Chapter VII, where they will be related to other data on perspectives about the D&U process itself as seen from within and from outside the actual D&U unit. At the end of this chapter, however, we will discuss the application of the D&U model developed in this project to the production of evaluative items for future research.

B. SAMPLING

The procedures by which respondents were selected for the MA and SRS studies were designed more to test the method and give a picture of the context of each D&U unit than to give a representative picture of the whole agency and its knowledge source and user communities. Our decision was to select individuals who had had substantial previous contact with the D&U units, rather than to try to compile a population list for the total system (a time consuming task, and one which might prove impossible). This bias should be kept in mind as we analyze the results below; but since we are primarily interested in this project in the world of the D&U unit, as opposed to that of the whole agency, we feel the results will be more comparable to the case study findings. We should note that the selection procedures miss those persons who are potential, but not actual, linkers to the D&U units, and so we cannot use the findings to tell us to what extent the D&U units relate to their total possible community of researchers and users.

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* If we had asked for evaluation of communication with all groups, then we would need some evaluation of the importance or value of each linkage, but by restricting respondents to important linkages this question is not needed.

Staff in the MA and SRS D&U units were asked to provide names of their important contacts in each of several groups (see below). Quotas were given for each group based on our impressions of group size, and considering the sample size we desired (about 100 cases per agency). D&U staff members interviewed in the case studies were not included here, so we should note that the group including "D&U project staff" refers to those contractors and grantees doing D&U projects, and not to the agency unit itself. Hopefully, any future study would re-measure D&U staff, and keep them separate throughout the analysis. The groups, together with the number provided by the D&U units and the final response figures, are given below:

Group:	Quota (max. N.)	N actually provided by D&U unit:		N useful questionnaires received:	
		MA	SRS	MA	SRS
Federal agency policy and planning	5	5	5	3	2
Federal agency research administration	15	15	15	9	9
Federal agency program administration	15	19	15	11	13
Regional office staff	15	15	15	11	10
State agency offices	15	15	15	8	15
Basic and applied researchers	15	15	15	14	12
Demonstration and D&U project staff	15	15	15	12	12
Local agency staff	15	15	--	10	--
Other (a free category used by D&U staff for important contacts not contained above)	--	8	--	6	--
T=	110	122	95	84	73
% of T:				69%	77%

(Overall, 80% of the MA and 82% of the SRS sample members replied to our mailings, but 11% of MA and 5% of SRS questionnaires were incomplete, returned blank, or otherwise rendered unusable.

C. ADMINISTRATION

The procedures used in collecting the data may be presented best in tabular form. Examples of the letters and telegram used are given in Appendix B .

Administration Timetable

Steps:	Dates: MA	SRS
1) Introductory letter explaining project and requesting cooperation	June 23, 1972	Aug. 4
2) First questionnaire mailing	June 29	Aug. 9
3) Follow-up letter and second questionnaire	July 24	Sept. 6
4) Reminder telegram	Sept. 5	Sept. 26
5) Phone Calls	Oct. 20	*

(* Not done because of relatively high response rate.)

D. CODING

This was an exploratory study, and as such we did not feel we had sufficient prior knowledge to ask anything but open-ended questions about content and uses of information, types of crisis, needs, etc. Thus, we were faced with a substantial task of developing code categories from the responses. Our desire was to produce generic codes for similar items whenever possible, both for ease of coding and for comparability across items. We discovered that most responses were so broad and complex that several distinguishable types of information, for example, could be extracted from the prose answers. Thus, we were obliged to code multiple responses for each question, noting the presence or absence of each code within the answer.* Codes were developed using the MA data and through a series of trials and re-definitions of codes using three separate coders.

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* Multiple coding of items requires special analysis treatment, since there is usually more than one response per case. The best solution is to shift the unit of analysis from the individual to the response, giving an "N" for analysis that signifies how many codes were used, rather than how many people responded. This is similar to our shift to communicative acts through aggregation of first and second groups sent and received.

One single coding structure was used for types of information sent, received, sought during crisis, and needed. Common codes were developed for uses to which received information would be put, uses the respondent perceived his audiences made of information sent to them, and purposes for which information was needed. Nature of crisis and problems encountered in getting crisis-related information were also jointly coded. Separate codes were built for each of the remaining open-ended items.

III. ANALYSIS OF LINKAGE

A. THE INFORMATION NETWORK

The difficulty in network analysis is that we must encompass and understand a large amount of data at the same time: groups or individuals linked by channels used at some frequency rate, communicating certain types of information, for specific uses. There will be as many linkages as there are pairs of groups, and we must include communication within as well as across groups. In our analysis we will rely on graphic presentations of these data. In addition, we are aided by the fact that we asked for important communication, ignoring the dimension of frequency of contact. We will also simplify by aggregating content across the four possible mentions representing linkage of any two groups; this approach is dictated by the small sample sizes with which we will be dealing.* We will also combine the groups sampled into just four: Federal policy and administrative, research and development, diffusion and utilization project staff (note that these are not members of the D&U unit, since these persons were not surveyed in this study), and a broad group of practitioners or users. With these ground rules in mind, we may turn our attention to Figures 5.1a and b and their accompanying tables.**

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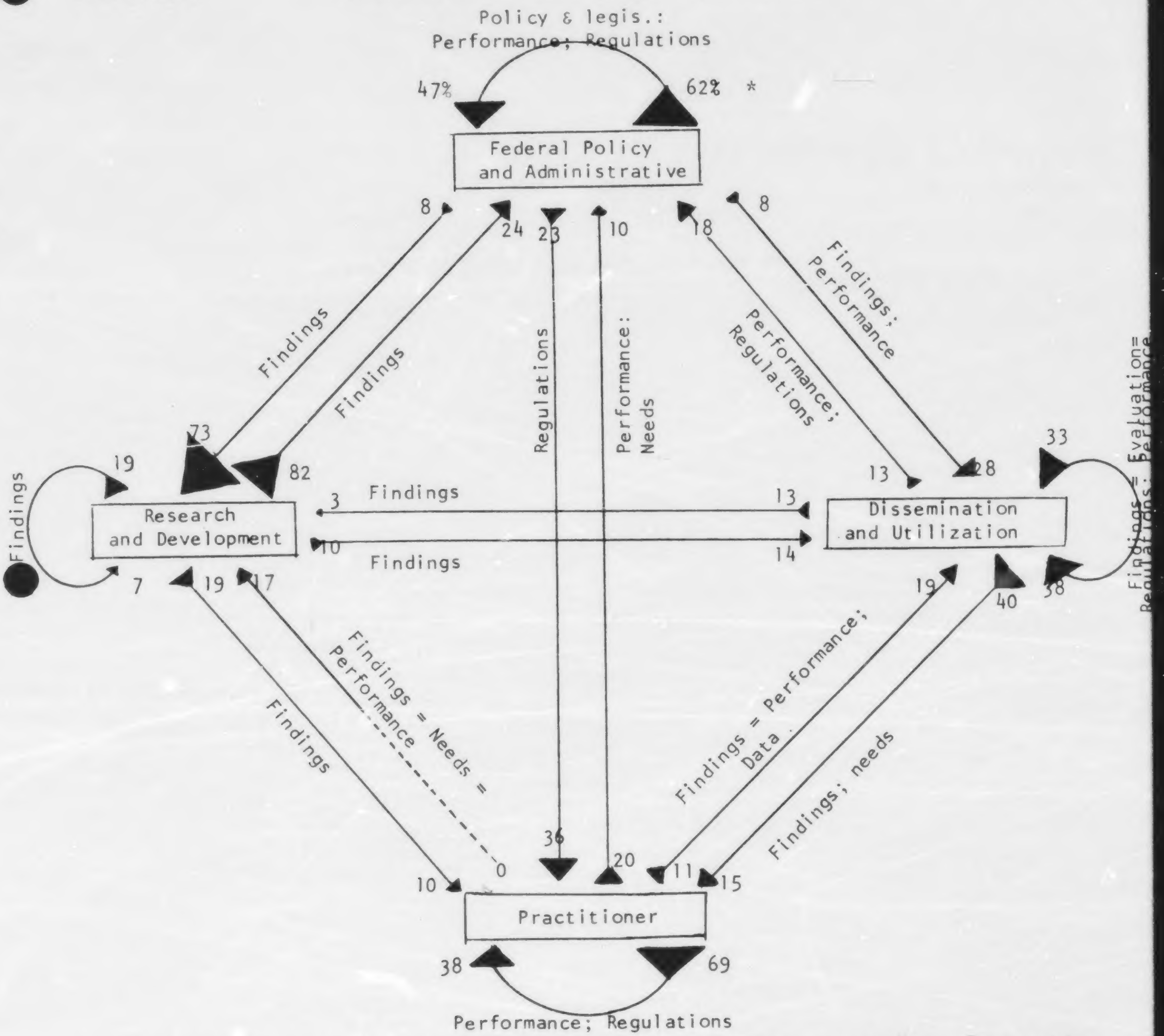
* There are four possibilities: group A mentions sending to group B, group A mentions receiving from group B, group B mentions sending to group A, and group B mentions receiving from A. With larger samples opposite types might be used to validate communication, or to assess effects of channel noise or fidelity.

**The instructions in the linkage section asked for important communication with persons or groups excluding the respondent's own. As we will see later, however, intra-group linkage is often the most frequent type. The collapsing process accounts for most of this (e.g., a Federal program administrator talking with a research administrator or policy maker). Some respondents did mention their own group in disregard of the instructions.

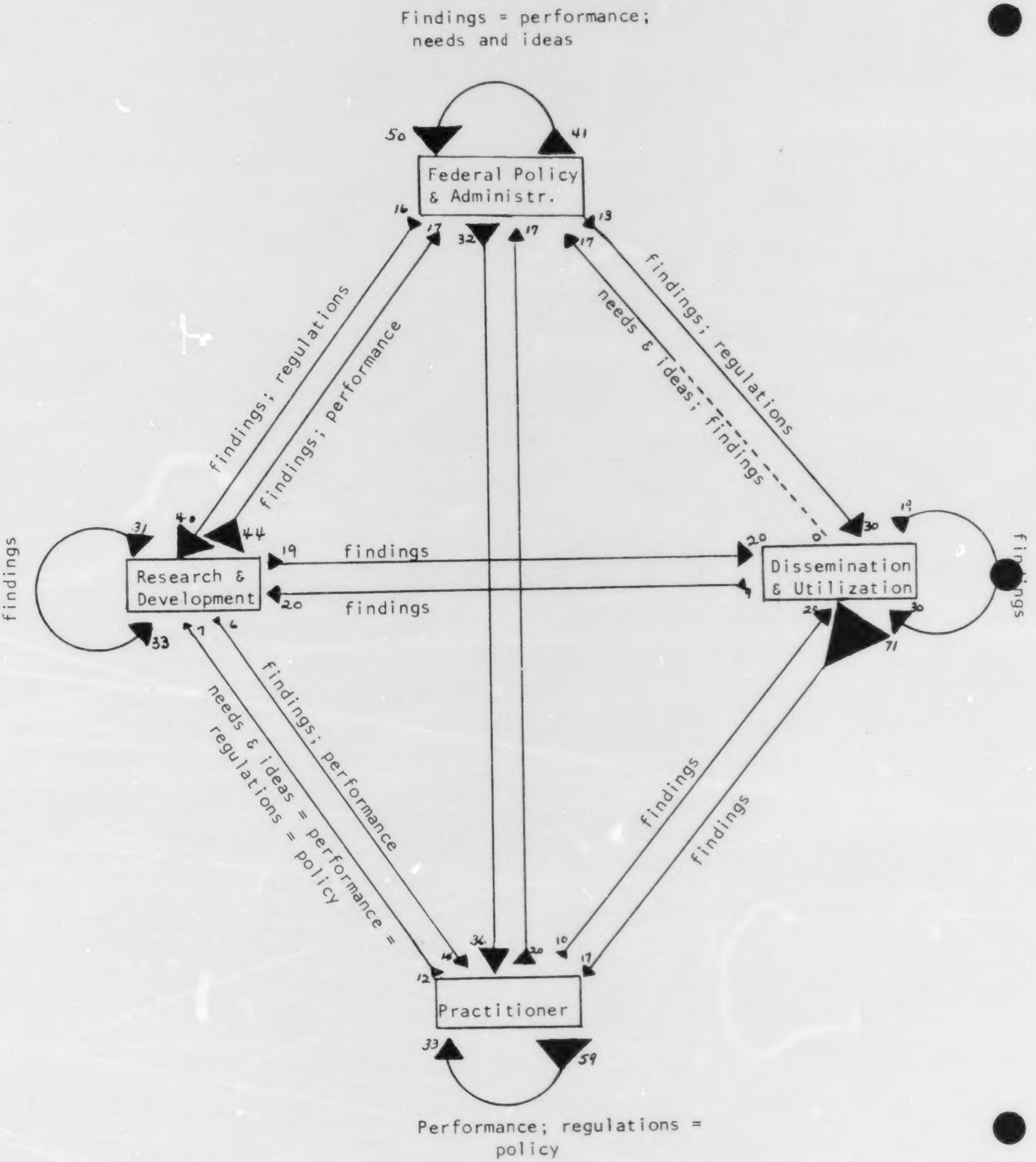
FIGURE 5.1a COMMUNICATION AMONG FOUR GROUPS, MA DATA


Policy & legis.:
Performance; Regulations
47%
62%
*
Federal Policy and Administrative
8
24
23
10
18
8
Findings
Findings
Regulations
Performance: Needs
Performance; Regulations
Findings; Performance
Findings = Evaluation=
Regulations; Performance
73
82
19
Findings
33
13
28
3
Findings
13
Research and Development
Dissemination and Utilization
10
Findings
14
7
19
17
19
40
38
Findings
Findings = Needs = Performance
Findings = Performance; Data
Findings; needs
36
20
10
0
11
15
Practitioner
38
69
Performance; Regulations

* Arrow heads and tails indicate graphically the percentages next to them. Percentages on arrow tails mean "% of mentions of information sent by group A as mentioned by senders in group A". Arrow heads indicate "% of information received by group B as mentioned by group B".

(See Table 5.1a for the same data in tabular form.))

FIGURE 5.1b COMMUNICATION AMONG FOUR GROUPS, SRS DATA


Findings = performance; needs and ideas
50
41
Federal Policy & Administr.
16
17
32
17
13
17
findings; regulations
findings; performance
needs & ideas; findings
findings; regulations
findings
31
40
44
19
findings
20
0
30
19
Research & Development
Dissemination & Utilization
findings
20
findings
4
33
7
6
25
71
30
findings; performance
needs & ideas = performance = regulations = policy
findings
findings
36
20
10
14
17
12
Practitioner
33
59
Performance; regulations = policy

(See Table 5.1b for the same data in tabular form.)

TABLE 5.1a MENTIONS OF COMMUNICATION AMONG FOUR GROUPS

MA Data

		GROUP RECEIVING INFORMATION				
		Federal Policy & Administr.	Research & Devel.	Dissem. & Utiliz.	Practitioners	Total Sent as Mentioned by Sender Groups
GROUP SENDING INFORMATION	Federal Policy & Administrative	62 47	8 73	8 28	23 36	100% of 39
	Research & Development	52 24	19 7	10 14	19 10	100% of 31
	Dissemination & Utilization	13 18	13 3	33 38	40 15	100% of 15
	Practitioners	20 10	0 17	11 19	69 38	100% of 45
	Total rcvd., as mentioned by receiver group	100% of 49	100% of 30	100% of 21	100% of 52	

Key:

% Sent - As mentioned by Sender / % Received - As mentioned by Receiver

TABLE 5.1b

MENTIONS OF COMMUNICATION AMONG FOUR GROUPS

SRS Data

GROUP RECEIVING INFORMATION

GROUP SENDING INFORMATION

	Federal Policy & Administr.	Research & Devel.	Dissem. & Utiliz.	Practitioners	Total sent as mentioned by sender group
Federal Policy & Administrative	41 50	16 40	13 30	32 36	100% of 32
Research & Development	44 17	31 33	19 20	6 14	100% of 16
Dissemination & Utilization	0 17	9 20	19 30	71 17	100% of 21
Practitioners	20 17	12 7	10 20	59 33	100% of 41
Total rcvd., as mentioned by receiver group	100% of 36	100% of 15	100% of 20	100% of 42	

Key:

% Sent - As mentioned by Sender / % Received - As mentioned by Receiver

The first figure contains the data from the MA study, and the second is based on the SRS data. We will describe each briefly, more as a guide to understanding than for complete description, and then zero in on a comparison of the networks of the two agencies.

In these figures each group was analyzed in terms of the percentage of the total mentions made by the group which are given to each group, including its own. This was done for information sent, based on senders' data, and for information received, as mentioned by receivers. Thus, the unit of analysis is shifted to mentions of communication rather than persons, since each respondent could mention two sources and two audiences. As a graphic aid in the figures, percentages of information sent or received are interpreted by the size of arrow heads and tails linking two groups. Arrow heads arriving at a group represent the percentages of mention given by that receiving group to incoming communication. Arrow tails leaving a group are the percentages the sending group mentions for each of its audiences.

The figures also indicate the most frequently mentioned content flowing from group to group. Because of the small number of cases, we were forced to aggregate the content group A respondents mention sending to group B, and content group B mentions receiving from group A. This simplifies presentation, but denies us the chance to compare similarities in perceptions of senders and receivers.

For example, the MA data in Figure 5.1a show that the Federal Policy and Administrative group are more active in communicating among themselves than to or from other groups. Here, 62% of the mentions of information sent list other Federal Policy and Administrative (Federal P&A) receivers, and at the other end of the linkage, 47% of the mentions of information received made by the Federal P&A respondents originated with others like themselves. The Practitioner group also shows the tendency to communicate more internally than externally. "Performance and regulatory information" is common to both groups, with "policy and legislative information" being most common for the Federal P&A group.

The R&D group appears sensitive to the Federal P&A sector, mentioning this group most often as the source of important information and as receiver of information sent. Content classified as "findings" was most common in both directions linking the two groups. In fact, it is not surprising that the R&D group's most frequent content is always findings, though this is equal in mentions to needs and performance information when coming from Practitioners. None of the Practitioners mention the R&D group as targets for their important communications, however, so that content code is based entirely on the R&D group's mentions of information received from practitioners.

We have already discussed the preponderance of internal communication among practitioners (with performance and regulations content most frequent). The Federal P&A group is most often mentioned as an important outside source among these practitioners, and the content is predominantly regulatory information. As mentioned above, this group does not mention R&D as an audience, and it only infrequently mentions researchers as sources.

Dissemination and Utilization project staff (D&U group) mention practitioners as the most frequent client for information sent, followed by others in the D&U group. There is a moderate degree of mention of the Federal P&A group as sources, but less as clients for information produced by D&U. Finally, there is a surprisingly small degree of linkage between the R&D and D&U groups, regardless of where it is measured. The D&U project group indicated more diversity in content handled (either produced or received) than did the other groups.

Comparable data for the SRS analysis are presented in Figure 5.1b. The arrows indicate a basic similarity to the MA network discussed above: there is more internal than external communication among the Federal P&A and Practitioner groups the R&D group links strongly to Federal P&A; and the D&U group mentions Practitioners as the most frequent client for information sent. There is a greater linkage here between the Federal P&A and Practitioner groups, and somewhat more between R&D and D&U. Again, there is a surprisingly high mention of findings as content, not just from the R&D group (which we would expect), but to this group from the Federal P&A and D&U groups, and between D&U and Federal P&A and Practitioners. The D&U groups in both analyses appear to be doing their transmission or translation job regarding findings.

Information about needs flows from Practitioners to R&D as a priority content in both systems, though we have noted that MA Practitioners do not mention R&D as important receivers. There is more of a flow of needs (relative to other types of content) in the MA network, as compared to SRS, to the Federal P&A group from Practitioners.

In summary, we are struck with the overall similarity of the networks, particularly in the extent to which the Federal P&A group and Practitioners serve as their own best sources and receivers, and in the close monitoring R&D personnel keep on the Federal P&A group. It may be that we are measuring a part of science in which relations to research sponsors are more important than relationships to scientific peers or consumers of knowledge. Also by way of summary, we note the similar patterns in both agencies linking the D&U and Practitioner groups: in both the D&U project staff most often mention Practitioners as clients, but Practitioners more often mention Federal P&A staff as important outside sources.

Some notes on the limitations of these analyses are in order. First, we have discussed the findings without regard to statistical tests of significance. The nature of the data (combined mentions, based on up to four linkages per person), and the relatively small size of the data set might be cited as reasons for this omission. Also, we have not yet developed the appropriate models for significance testing in this type of network analysis. We might project that information theory, rather than significance, may provide better leads in the future, since the nature of the measures is directly related to the topic of investigation -- i.e., information flow.

Another limitation is that we have no direct data on the <ins>relay</ins> of information through direct re-transmission, or translation. We do not know if the D&U groups are translating information received from R&D for their important Practitioner audiences. It is methodologically possible to add such data in the future (e.g., by asking for the source of the information each individual mentions he sends out). A final comment on the method used here is needed: we sense a great potential for such analyses, the surface of which is only skimmed in this study. Network descriptions such as these could provide information on comparative variance in sources or audiences across groups, channel fidelity and similarity of content sent with that received, channel utilization for various content, etc. Such analyses will demand both larger data sets, and elaboration of both the possible comparisons and means of testing differences.

B. MEDIA PREFERENCES IN THE NETWORKS

In a large-scale analysis of linkage we would want to examine the media used to pass particular types of content within and across groups. We would be able to identify groups having close interpersonal contacts, those engaged in translations of content from one kind of media on input to another kind for output. By making the assumption that interpersonal media are used more as groups become more integrated, we could examine patterns of network integration for specific content areas. Many other analyses could be made as well, but the sample size imposes limits. For example, in the MA data the Federal P&A group made a total of 49 mentions of linkage with all groups, with just under half going to others in the Federal P&A category. Thus, with only nine linkages from the group to D&U project staff, and only five to Practitioners, it is impossible to break down the mentions according to both content and media.

It is possible to get some tentative idea of integration among the four groups by ignoring content, and collapsing the nine different media originally rated into two types, "interpersonal" or "informal" and "impersonal" or "formal" media. This distinction has proved fruitful in studies of communication among scientists (e.g., Parker, Lingwood, and Paisley, 1968; Lingwood, 1969). Results of these studies showed informal media predicted scientific productivity better than use of formal media. Also, informal media correlated higher with numbers of sociometric choices scientists received from peers as valuable contacts. The basis for the dichotomy is thus the idea that interpersonal communication is more efficient, implies a past history of linkage (perhaps originally through formal media), and should facilitate two-way flow or feedback, all of which reflect integration of the network -- which may itself be defined partly through sociometric closeness and availability of communication paths, and partly through shared orientations, values, and concerns.

While collapsing across media eliminates the rich detail of utilization of specific media for certain functions, it does simplify the analysis. The analysis for each agency resolves to this simple question: what is the percentage mention of interpersonal media linking each group to itself and to others? This is actually a conservative test in these data, since there are twice as many media classified as formal as there are informal media (six to three), and the straight percentage is not weighted by possible choices. As in the linkage analysis above, we have each group relationship assessed by both senders and receivers, separately for information sent and information received. The results are tabulated in Tables 5.2a and b.

Many things are compressed into these tables. Let us examine first the marginal percentages for informal media across the four groups. These figures indicate the overall dependence of the group on interpersonal media for the important inputs and outputs mentioned by members. We see in the MA data that there is some variation across the groups, and between sending and receiving within some groups. The Federal P&A and Practitioner groups appear to be best integrated through use of interpersonal media for the information they send, and the Federal P&A and D&U groups for information they receive. In the SRS data, the overall use of interpersonal media is lower for both input and output, suggesting a less integrated system perhaps resulting from newness, or dispersed or disparate units. SRS Practitioners remain highest in interpersonal media use for information sent. The D&U project group is much lower than other SRS groups, and very much lower than the roughly comparable MA group.

By looking within the tables we gain specification of the group media patterns. In the MA data, intra-group integration is lowest in the R&D group, and roughly comparable in the others; but the figures (in the main diagonal) do not show that the groups have greater reliance on interpersonal media for internal communication than for linkage to other groups, a condition we would expect to find in a "real" group, but would not encounter in an analytical group which has no real cohesion in operation. In the SRS data, the Practitioner group does show somewhat greater use of interpersonal media for internal vs. external communication.

Some discrepancies in media use appear in individual cells, comparing ratings of senders and receivers. For example, in the MA data, Federal P&A are higher in rating interpersonal media for communication to Practitioners than are the Practitioners when they mention getting information from the Federal P&A group. Differential perceptions of importance of contact might explain some of the difference. R&D staff rate interpersonal media higher in sending information to Federal P&A, compared to the ratings Federal P&A give to receiving information from researchers. These particular discrepancies do not appear in the SRS data. There, the greatest difference is in information sent from D&U to Practitioners, where the D&U group mention interpersonal media less often for information they send than do Practitioners for that which they receive.

TABLE 5.2a MENTIONS OF MEDIA LINKING FOUR GROUPS, MA DATA

(Mentions of Interpersonal Media as % of Total Mentions)

GROUP RECEIVING INFORMATION

GROUP SENDING INFORMATION	Federal Policy & Administr.	Research & Devel.	Dissem. & Utiliz.	Practitioner	Overall Sending Percent Interpersonal
Federal Policy & Administrative	69 / 80	78 / 61	56 / 78	94 / 68	72
Research & Development	97 / 33	40* / 29	88* / 0*	50 / 100*	67
Dissemination & Utilization	72* / 57	43* / --	71 / 64	14 / 48	60
Practitioners	67 / 71	-- / 64	64 / 83	79 / 63	73
Overall Receiving Percent Interpersonal	/ 68	/ 56	/ 70	/ 63	

* Based on fewer than 12 total mentions (i.e., 2 persons times 2 mentions each times 3 media ratings).

Key:

% as mentioned by sender / % as mentioned by receiver

Overall: Senders give 69% interpersonal media choices.
Receivers give 64% interpersonal media choices.

"Interpersonal" Media = conversation, telephone, correspondence and memos.
"Impersonal" Media = reports, journals, books, abstracts and summaries, conventions, guidelines and manuals.

TABLE 5.2b MENTIONS OF MEDIA LINKING FOUR GROUPS, SRS DATA

(Mentions of Interpersonal Media as % of Total Mentions)

GROUP RECEIVING INFORMATION

GROUP SENDING INFORMATION

	Federal Policy & Administr.	Research & Devel.	Dissem. & Utiliz.	Practi- tioner	Overall Send- ing Percent Interpersonal
Federal Policy & Administrative	50 72	54 56	44 42*	42 60	47
Research & Development	52 50	53 67	50* 50*	33* 64	53
Dissemination & Utilization	42 67	37* 50*	50* 17*	20 67	28
Practitioners	60 69	92 100*	80* 17*	77 78	75
Overall Re- ceiving Percent Interpersonal	68	47	34	65	

*Based on fewer than 12 total mentions (i.e., 2 persons times 2 mentions each times 3 media ratings).

Key:

% as mentioned by sender / % as mentioned by receiver

Overall: Senders give 56% interpersonal media choices.
Receivers give 60% interpersonal media choices.

"Interpersonal" Media = conversation, telephone, correspondence and memos.
"Impersonal" Media = reports, journals, books, abstracts and summaries, conventions, guidelines and manuals.

In terms of cross-group integration through use of interpersonal media, in the MA data the greatest integration (even with the discrepancy noted above) is for information sent from Federal P&A to Practitioners, though the reverse flow is not so integrated. In SRS, greatest integration is from Practitioners to R&D, though the base is small for mentions made by R&D staff.

While the small samples restrict the amount of confidence given and attention paid to the particular results in the tables, particularly in the various cells, the analyses have demonstrated a potential for providing rich detail in overall use of different media by groups, own-other group comparison, input-output comparison, and discrepancies between perceptions of senders and receivers. Future expanded studies will be able to explore these dimensions in detail. Subsequent work should also seek to develop appropriate tests for differences for these rating data, an aspect we have not explored here, since our intent was more to examine the ability of the analysis model to generate variation, rather than to achieve statistical confidence in the specific differences obtained.

The notion of monitoring the proportion of informal communication as an index of group integration deserves more exploration. We base this analysis on the assumption that as collectivities of individuals become interacting groups, the frequency of interpersonal communication should increase. Since interpersonal media allow for more complete and rapid communication, the group thus becomes more able to retrieve and share information (particularly that stored in brains rather than in documents). An increase in interpersonal communication should also indicate increased perceptions of community, identity, and belongingness. This index may be two-sided, however: one needs to monitor interpersonal communication across groups to insure that any one has not become so well integrated internally that he is not talking to important outsiders.

IV. CRISIS SITUATIONS

A set of five questions asked for comments concerning information use in specific situations which the user would describe as a "crisis." Respondents were asked to describe the nature of the perceived crisis, information needed, attempts to acquire such information, and to suggest ways in which information could be secured more effectively in the future.

A. DEFINITIONS OF CRISIS SITUATIONS

We often hear complaints about government by "crisis management": the firefighting effort of handling one crisis after another, without adequate time for reflection, planning, or information seeking. Still, we have little information on what persons in the Federal government, state governments, and public agencies (including the research establishment) mean by the word "crisis." Thus, a primary concern for this part of our analysis was to take a close look at the verbatim responses of our respondents, and in the process to develop preliminary coding schemes for crisis situations.

We asked respondents to identify their most recent work-related crisis, and followed up with questions focussed on the informational aspects of the crisis. Let us begin by reporting verbatim what some of our respondents say are their crises.

For these descriptions we have developed a two-level code: first, we will separate out those crises which we judge not to be informational in nature; then for the information crises, we will apply a scheme which notes the type of information and the "crisis instigator" -- the person or group which touched off the situation. The distinction between informational and non-informational crises was often very fine in our coding, though we adopted the decision rule that the major component of the response would be used in making coding decisions. Thus, if a respondent says his most recent crisis was, "writing a proposal for continued funding" we classify this as a "funding" crisis; but, if he had said, "finding out what the guidelines and requirements were for writing a funding proposal," then this would have been coded as an informational crisis.

Informational crises are the most frequent class, but not the majority in both agency's data. Here are some examples in each category.

Funding crises: Most of these responses are predictable: respondents in government mention crises such as, "a state mistake in submitting matching funds," or "attempt of private agencies to revise budget."* On the receiving end of funding, project and research staff most often mention grant applications, tight deadlines, and threatened or actual loss of funds for programs and projects.

Personnel, Interpersonal, and Intergroup Crises: This broad category of human relations crisis ranged from militant clients, racial tensions, and job discrimination to wage disputes, loss of jobs, and lack of cooperation among groups. Here are some examples: "Demonstration opposing program for migrants." "School refusal to provide data for a study." "A staff member failed to do his job." "Dispute over seniority and layoff during a cutback." "Comments critical of a program appeared in the news media."

Administrative or Organizational Crises: These responses dealt with the difficulties of administering, organizing, or getting work done: "Development of rules and regulations for a new law." "Scheduling of visits." "Senate hearing on oversight of program."

Other: This small residual category contained two types of responses: first, those who said they were in continual crisis; and second, those who mentioned some natural disaster (e.g., a flood).

Informational Crises: Twenty nine (41 per cent) of the MA responses, and 22 (33 per cent) of those from SRS dealt with crises we coded as primarily informational in nature. We have applied a two-component coding scheme to these responses: each response was coded for (a) the type of information processed in defining the crisis, and (b) the cause or instigator of the crisis. Since there were, in total, only 51 informational crisis responses, and since the two code components have six and five levels, respectively, we cannot make any statistical statements about the response patterns. Rather, we will use the coding to help us determine frequent themes. Table 5.3 contains the results of this coding.

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*These responses will be presented as direct quotes, although in some instances we have edited them to preserve respondents' anonymity.

TABLE 5.3

A TWO-PART CODE FOR INFORMATIONAL CRISES: MA AND SRS DATA

CRISIS INFORMATION TYP	Requestor, Instigator, or Groups Mentioned as Source of the Crisis Situation					
	Federal Agency or Government in General	Congress: Testimony, Bugetary or Informational	Self: Own Needs or Products	Client (including Researcher as Client	Unspecified or Other	TOTAL
R&D Knowledge and Research Methods	0 5	0 0	1 3	3 0	0 2	4 10
Needs for Research or Program Services	0 0	0 1	0 0	0 0	0 0	0 1
Description of Current Status of Programs or Clients	2 0	1 3	1 0	0 0	1 0	5 3
Plans and Projections of Future	5 1	1 0	0 0	0 1	1 0	7 2
Policies, Regulations and Procedures	1 0	1 0	0 0	0 0	0 1	2 1
Unspecified Other	3 2	5 1	0 0	0 0	3 2	11 5
Total	11 8	8 5	2 3	3 1	5 5	29 22

Key: #MA
#SRS

The information type code was developed so as to be similar to the "type" code used earlier. The instigator/requestor groupings were derived from inspection of the verbatim responses. Across both agencies, R&D information is most frequently tied to crises: either in terms of finding out what is known, or in terms of telling someone (usually an agency policy maker) about R&D findings. R&D information in crisis situations was mentioned more frequently by SRS respondents. Typical crises involving R&D and agency staff from SRS were described as: "Prepare progress report on alcoholism studies for higher levels," "Preparation of policy implications of research," and "Crash assignment to notify office of Secretary of research findings having policy implications." There were no mentions of R&D crises involving agency policy makers from MA respondents, though they did mention crises involving plans or projections for higher-ups in the agency.

If we concentrate for a moment just on the "instigator or source" component of the crisis, we find that 65 per cent of the informational crises involve either agency staff or Congress. In fact, the response "preparing testimony for Congress," or "Congressional hearings," were very frequent in the data -- though more often from MA than SRS respondents. Although we did not analyze the data to include the job role of the respondent at the same time, it is our impression that most of these comments come from persons employed by the Federal government. Thus, *reporting to one's superiors--either in the executive or legislative branches--is a "classic" definition of a crisis for quite a few of our respondents.*

Our coding scheme does not capture one important theme which ran through many of the crises, both informational and non-informational. This is time, or rather, the lack of it. Thirteen respondents (39% of the respondents of MA and SRS combined) mentioned short or unrealistic deadlines or crash assignments; most of these from governmental respondents involved requests from or responses to policy makers. At the R&D staff level, short grant proposal deadlines accounted for most of the time pressure (together with the push to write reports).

B. SUGGESTIONS FOR INSURING INFORMATION IN FUTURE CRISES

The last question in the crisis set was put as follows: "Assuming such crises will reoccur in the future, what might be done to insure that needed information is available?" Several broad themes run through the responses:

(1) "Keep the communication lines open." This rather vague suggestion is typical of a group of comments from respondents who clearly do not have any specific mechanisms in mind. Most of these refer to interpersonal linkages.

(2) "Develop better information storage and retrieval systems." This set would depend on information systems for such diverse tasks as statistical and performance data, research findings, and management information. Better data gathering systems were mentioned by several respondents, and could be coded into this set, since most of these comments stressed a need for the capacity to get and handle system-descriptive data.

(3) "Better long range planning." This was a typical comment from those who mentioned a time or deadline press, or need for rapid responses to unplanned requests. In part this group is saying that if top policy makers could project their needs better, and keep them informed, then the magnitude of crisis would be reduced. Some of the planning comments refer to the respondent's own job, however.

(4) "I have all the information I need." A few individuals took this approach, indicating the solutions to their crises did not depend on getting information, but rather, on doing something with-what was already known.

(5) "Nothing can be done." Finally, a few respondents simply accepted crises of the type they had mentioned as part of their lot, or as unavoidable artifacts of the way the system works (or perhaps better yet, does not work). Such responses tended to occur in those crises in which unexpected demands, often with a high time pressure, were made. Inability to anticipate--particularly in regard to the requests of policy makers and Congress--was tied to some of these comments.

C. STATISTICAL ANALYSIS OF "CRISIS" RESPONSES

So far we have done very little statistical analysis of crisis. Below we will make a brief excursion into this area to analyze types of crisis by information needed, sources of information, and the "what can be done" question covered above. For this analysis, we have dropped the notion of source or instigator of crisis. Let us begin with crisis compared across the four job groups.

There are differences here (in Table 5.4) within each agency by respondent group. In MA, Federal P&A and D&U respondents are high in mentioning informational crises; Federal P&A are also high in administrative-organizational crisis mentions. Funding crises receive most mention in the D&U group. Among SRS respondents, Federal P&A staff most often mention informational crises; R&D staff are divided between informational and administrative-organizational crises, and Practitioners most often metnion administrative-organizational crises. The small numbers underlying the percentages should be noted, however.

[Insert Table 5.4 here]

In Table 5.5 we will drop our convention of analyzing by group of respondents to look at information processing according to type of crisis.

Part a of the table looks at mentions of types of information sought by respondents who indicated each type of crisis. The point of interest here, as we saw in the verbatim responses, is the relatively low percentage of mentions in either agency of research-related information seeking--even in thos crises coded as informational in nature. In MA, informational crises produce regulatory or administrative information seeking. Administrative or organizational crises lead to seeking administrative information most frequently

TABLE 5.4 NATURE OF CRISIS MENTIONED BY FOUR GROUPS

	MA Groups					SRS Groups				
Nature of Crisis:	Fed. P & A	R & D	D & U	Pract.	Total %	Fed. P & A	R & D	D & U	Pract.	Total %
Informational	45%	38	44	29	39	53%	50	33	11	33
Administrative, Organizational	41	38	11	33	35	20	50	33	55	40
Funding	9	15	44	29	21	7	0	33	33	21
Other	5	8	0	8	6	20	0	0	0	6
	100% of 22	100% of 13	100% of 9	100% of 24		100% of 15	100% of 6	100% of 9	100% of 18	

in both agencies. In funding crises, however, MA respondents were most likely to mention seeking information directly related to fund-getting or budgeting, while SRS respondents most often responded to funding crises by seeking regulatory or administrative information.

[Insert Table 5.5 here]

The next topic (in part b of Table 5.5) is that of internal vs. external information-need during crisis. Two five-point scales were used to assess the extent of information needed from internal and external sources during the crisis mentioned. The results show little difference using traditional tests of significance (pairwise t tests): only among MA respondents who mentioned administrative-organizational crises is there a tendency for greater need for information from within vs. from outside. There are no statistical differences between agencies for internal vs. external, or by crisis types on internal or external in either agency.

Finally, in part c of the table, we will look again at suggested solutions for information-gathering problems in future crises of a similar nature. MA respondents give informational or administrative solutions roughly equal weight for each type of crisis. In SRS, there is more agreement on informational solutions for each type of crisis.

TABLE 5.5 TYPE OF CRISIS

	MA				SRS			
	Informational	Adminis. Organiz.	Funding	Other	Informational	Adminis. Organiz.	Funding	Other
a. Types of infor. needed *								
Research: findings, needs	14%	6	9	(2)	18%	12	20	(1)
Evaluation, performance	22	12	4	0	18	18	0	0
Statistical data	39	16	9	(2)	15	12	12	0
Funding	8	9	41	0	0	12	20	0
Regulations, adminis.	22	44	18	0	45	36	40	(3)
Policy, planning	3	12	18	0	3	9	8	(2)
	100% of 36	100% of 32	100% of 22	(4) mentions	100% of 33	100% of 33	100% of 25	(6) mentions
b. Mean Extent to which infor. was needed from:								
Inside own group	3.1	4.0	3.7	-	3.9	3.8	4.0	-
Outside own group	3.9	3.2	3.8	-	3.8	3.4	3.4	-
(5=high, 1-low)								
c. What should be done:								
Better admin., organiz., scheduling	47%	55	38	-	12%	12	22	-
Better infor., dissem. communication	47	45	38	-	59	81	56	-
Funds, legislation	6	0	23	-	29	6	22	-
	100% of 17	100% of 20	100% of 13	-	100% of 17	100% of 16	100% of 9	-

* Based on mentions, multiple responses allowed

V. ANALYSIS OF UNMET INFORMATION NEEDS

Another approach to communication analysis is to determine perceptions of need. That is, regardless of the communications facilities, content, and contacts now available, where is the individual or group "hurting" the most? Such an approach is obviously directly relevant to communication system planning. In this study the needs section was placed late in the instrument so that it could serve as a summary, stimulated by all of the other questions we had asked about linkage. The approach to needs assessment is a simplified one, compared to that contained in the Mick, et. al. (1972) study of information needs in education. But the framework is the same: an assessment of type of information needed, source and media preferences, and an indication of the purposes for which the information is required. While Mick, et. al. had sufficient information to pre-code the alternatives, in our study we were forced to ask the questions in an open-ended format. (Toward the end of this chapter we will specify a design for further work which moves in the closed-ended direction.)

Types of need: In the MA data, a majority of the mentions of needed information (55% of 88) were coded as evaluative, performance, or statistical data. Thirty percent mentioned research or research-needs information. Among mentions by SRS respondents, the two groups of needs are cited with almost equal frequency (research findings/needs at 46%, evaluative-performance-statistical at 43%). Other need categories were rarely mentioned (see Table 5.6a). One MA (R&D) respondent sums up many of the characteristics of needed research information as follows: "A systematic, concise, usable update of all research in my area." These characteristics were echoed, in whole or in part, by many others. At the Federal level, research needs often mixed with other categories--(again an MA respondent): "policy oriented research; well conceived evaluation studies; and current, accurate performance data." This mixed response was fairly typical of many Federal Policy and Administrative respondents, who blended research needs with the next most frequent categories of performance and evaluation.

[Insert Table 5.6 here]

As some of the comments indicate, there are differences in information needs according to job-group membership of respondents. In the MA data, (also in Table 5.6a) the Federal P&A group is highest in mentioning evaluative, performance and statistical information, followed closely by Practitioners. Not surprisingly, R&D respondents most often (45% of the time) mention research-related information. In SRS the pattern is somewhat different: while R&D respondents again indicate the highest need for research-related information (64% of mentions), this need category is also the most frequent one for Federal P&A and Practitioner groups as well. Only the D&U group respondents break this pattern, giving more mentions to evaluative, performance and statistical information.

TABLE 5.6 TYPES OF NEEDED INFORMATION

	MA					SRS				
a. Types of infor. needed	Fed. P&A	R&D	D&U	Prac.	Total %	Fed. P&A	R&D	D&U	Prac.	Total %
Findings, needs	24	45	33	24	30	48	64	33	44	46
Evaluation, performance Statistical data	61	40	50	59	55	45	27	53	41	43
Policy, regulations, guidelines, adminis.	9	15	17	14	13	7	9	13	15	11
Funding	-	-	-	-	-	6	-	-	3	3
	100% of 33*	100% of 20	100% of 6	100% of 29		100% of 29	100% of 11	100% of 15	100% of 27	
b. Group from whom infor. should come:										
Federal P&A	61	28	23	35		42	0	17	17	
R & D	9	11	0	8		5	20	8	8	
D & U	0	0	0	0		0	10	17	8	
Practitioners	17	6	0	19		16	20	8	29	
Combinations	13	56	77	38		37	50	50	37	
	100% of 23*	100% of 18	100% of 13	100% of 26		100% of 19	100% of 10	100% of 12	100% of 24	
c. Media:										
Formal	79	33	40	50		68	67	55	54	
Informal	5	27	20	33		9	8	27	23	
Interpersonal	16	40	40	17		23	25	18	23	
	100% of 19*	100% of 15	100% of 10	100% of 18		100% of 22	100% of 12	100% of 11	100% of 26	

* Based on mentions, multiple responses allowed.

Subsequent research, with larger and more representative samples, should explore these suggested differences in more detail and should search for the reasons for the possible greater need for research-related information in all but the D&U group within SRS. Age of the system, nature of the field, or organization of the network might make a difference: i.e., SRS is a younger, more diverse agency than MA, and this fact may result in greater need for research information.

Table 5.6b examines preferred sources for needed information within each of the four respondent groups, but we cannot at the same time include type of information in the analysis. The table thus gives only source preferences. It shows that, for both agencies, the Federal P&A groups most often mention sources for needed information within their own broad group, while the other groups favor combinations of sources in most cases. Cross-agency comparison also suggests that the MA Federal P&A group is higher than its SRS counterpart in needing information from other Federal P&A staff in the agency.*

The final analysis we will report here (Table 5.6c) examines media preferences for needed information in each respondent group. By and large, formal print media (articles, reports, etc.) are most often mentioned (by all groups in SRS, and by Federal P&A and Practitioners groups in MA). Interpersonal media would be used most often by MA R&D respondents, and formal and interpersonal media are equal for MA D&U respondents.

Several respondents mentioned that their needs were not for more information, but rather, for more time, facilities, funds, or trained staff so that they could absorb and use the information they are now getting. Others indicated that quality or packaging were more important to them than quantity. For example, "The problem is quality and relevance, rather than form...it is how information is selected and 'packaged,' whether it is analytical or reportorical, etc., that is crutical, [rather than] questions of quantity." Thus, it becomes even more obvious that solutions cannot be built on the simple philosophy of providing more and more information. While we have seen in the comments that many do need more, others are indicating that structural or procedural solutions are required so that they can utilize the information they are getting now.

Again, the last two tables suggest interesting leads which can be followed up only when larger data sets are obtained and when an analysis can be made which uses an approach such as that which will be suggested at the end of this chapter. In the spirit of the pre-test, however, we have determined that the category system used for current information processing does an adequate job of coding information needs. Future methodology should, however, allow respondents to indicate needs other than information, or put information in the context of other needs. Also, provision must be made for those few people who say they are getting too much information.

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*A more detailed analysis (not shown) revealed that 31% of the MA Federal P&A indicated others in precisely their own group, so the other 30% are expressing need for information from different parts of the agency structure. In SRS, 23% of the Federal P&A indicated same group, leaving 19% indicating others in the agency.

VI. SUMMARY

Throughout this analysis, we have made such limited substantive comparisons between the two agencies studied as seem warranted, given the nature of the samples and size of the data sets. In summary, however, we have noted the overall similarity of linkage mentions in the MA and SRS data, though media use patterns show SRS to be a less integrated system (through low mention of interpersonal media use). In crisis situations, we noted the small extent to which research-based information was mentioned as being sought during crises coded as "informational" in nature. Perhaps the pressure and immediacy of such situations mitigate against the somewhat time consuming process of seeking and adapting research to their solutions. The information need analysis showed SRS respondents most frequently need research information, with print media sources as the predominant delivery system.

The profiles suggest MA as a system operating most often with data (on performance, etc.) rather than more digested research findings, and doing so through established informal channels. SRS has not adopted this model, but expresses a higher need for research and a dependence on print. Three reasons might be suggested for this: (1) the newness of the SRS system, (2) its character (physical dispersion or topic diversity), or (3) the nature of the welfare-rehabilitation field itself.

VII. NEXT STEPS

During the course of this project, it has become apparent that a linkage analysis approach to the study of D&U must be closely tied to the D&U model itself in two ways: (1) linkage behavior information collected from respondents must be in a form which allows analysis using the framework of the model, and (2) we must be able to compare attitudes about the D&U process with actual linkage behaviors. In addition, we must move away from rambling qualitative answer formats to methods capable of efficient processing of the extremely large data sets which are generated when we ask respondents to record communication behaviors.

An example of our present thinking about linkage analysis methods is given in Figures 5.1a and b. This technique expands on the similar method used by Mick (*et. al.*), 1972, in their study of information needs. We have developed prototypical coding schemes for content, sources and receivers, media, and uses of information from which the respondent constructs frequent or important communications. The resulting data may then be used, with the mention as the unit of analysis, to analyze source-receiver-content combinations that the model predicts we should find. Such analyses also would produce detailed descriptions of communication in the system which would be directly useful in processes designed to help managers and policy makers develop changes to improve linkage where the data say it is weak. The data, given sufficiently large samples, could be aggregated together for each respondent for comparison of his linkage behavior with his attitudes about the D&U process.

Before one begins analysis of the very complex (at least 5 dimensional) data sets obtained in linkage analysis, it is necessary to have some guide to the potential descriptions and comparisons in the data. The first step is thus a notational scheme for linkage. A prototype scheme would be needed which defines the possible types of simple descriptions, intra-group relationships, and intergroup comparisons. For example, an array of data identified as $S_A R_B C^{n}_{n=1} M_1 U.$, is the relatively simple examination of all of the n types of content contained in those messages received by group B from source group A, across all types of Media and Uses for information. At the other extreme, the notation scheme should also be able to define complex intergroup linkage such as "feedback," and, in between, the moderately complex analyses of a group's inputs vis-a-vis its outputs. Work is in progress on such a scheme at the present time.

The primary difficulty with linkage analysis at present is not conceptual, but rather hinges on the fact that the multi-dimensional data are not conveniently handled by existing statistical computer software. Contingency table programs collapse under the strain of five-way data solids containing literally hundreds of thousands of cells for all combinations of source, receiver, content, media, and uses. It is obvious that special programs must be developed to provide whichever aggregation of data the researcher desires, and which apply information theory or Markov processes (or a combination of the two), especially for input-output analyses and the more complex intergroup forms.

One proposal for detailed linkage analysis has already been submitted to the Mental Health Services Development Branch of NIMH, one of the two D&U units omitted from the present pilot test. Here, and in subsequent work, we would strive for a larger, more representative sampling of respondents. The twin keys to success appear to be (1) extensive pretesting of response alternatives in the linkage section, coupled with expansion of the D&U attitudinal items, and (2) a carefully designed interchange in which the results are fed back to the agency in some coherent utilization program (e.g., coupling the results with the type of agency self-analysis spelled out in Apprendix C).

This brief description of next steps has revealed the extreme complexity involved in doing comprehensive linkage analysis in a D&U system. This complexity cannot be ignored, as it is a part of the reality confronting any research on human communication. The results from the pilot study have indicated that the method has the potential of providing much better data on the communication behavior of a system than we have had previously; next, assuming data collection and analysis problems are solved, we will be able to move on to system problem-solving activities based on the expression of linkage goals and a comparison of these to the results of the analysis of current linkage. The result should lead to more effective communication within the subject D&U systems.

CHAPTER VI

THE FEEDBACK-INTERFACE CONFERENCES

I. INTRODUCTION

The third major activity in this project was a pair of conferences held in late 1972 with the Manpower Administration and Social and Rehabilitation Service systems. These conferences had a dual intent: first, we saw them as a chance to gather additional data about the two D&U systems involved, and to validate the information we had gained during the agency case studies and pilot surveys of linkage. Second, we hoped to initiate a problem-solving activity within the agencies dealing with such difficulties as should be indicated either in the data or in the participants' comments. Conference participants would be selected to represent a broad spectrum of each agency's D&U system. In this chapter we will describe the process, inputs, and results of the two conferences.

Only two of the agencies were chosen for conferences as it was felt that we needed to have a complete set of input data from the system before going on to the feedback-validation conference model. This rationale limited us to those two agencies, MA and SRS, which had undergone both the case study and pilot study phases of the project.

In the preliminary discussions which led to the design of the conferences, we attempted to build in the following specific goals:

(1) Each conference should begin with true communication -- the development of shared meanings -- by providing participants and CRUSK staff with a common framework within which to understand and talk about D&U. This was to be accomplished by use of the D&U model developed in the project. In part the use of the model was also a test of this new conceptual scheme: would it prove meaningful and useful to the participants?

(2) Each conference should allow us to feed back both the qualitative data from the case study and the quantitative results of the pilot study of linkage, without creating a situation in which the feedback became cumbersome or overly-dominant in the conference. Again, the findings would be presented in terms of the model, where possible.

(3) The conference setting would allow us to learn in more detail about D&U in each agency through the reactions of participants to the data sets and the model, and through the problem identification and solution-building activities to be included.

(4) Each conference should produce some progress toward problem definition and the initial steps (if no more than the mobilization of concern and community building) toward the solution of problems.

II. CONFERENCE DESIGN*

The processes developed to reach the goals specified above produced a model for the conferences which combined the more common aspects of data feedback with a problem-solving sequence design. The result was a model in which both CRUSK staff and participants would have an opportunity to make inputs. Although the design changed somewhat for the second (MA) conference, the basic model for both meetings was that of a two-day format, heavy on CRUSK inputs (the model and the data) the first day, moving more toward work by participants as one group and in sub-groups the second day. Our inputs would begin with an exposition of our theoretical perspectives on D&U and the model currently in use, and then move on to the data. Specific data inputs would be the case study materials as coded into the model, the linkage-oriented pilot survey data, and comparative materials from other agencies' data.

Interspersed with the inputs toward the end of the first day, and almost exclusively on the second day, participants would be assisted in the development of problem diagnoses, and from these, priorities for action and initial solution development. The outputs of the problem-solving groups were seen as important products of the conferences which would, hopefully, be used by each agency to improve its D&U system. Each conference would end with an evaluation of the meetings, designed to improve our performance in such settings in the future.

Obviously, the design must reflect the needs, interests, and expertise of the conference participants. From the beginning, we had seen the conferences as a chance to bring together a wide range of individuals from each system, including agency policy, administrative, program, and D&U staff, R&D personnel, and representatives of important practitioner groups.** Potential participants were selected from the samples drawn for us by the D&U units for the pilot study phase, which had groupings of individuals in each of the above categories. Thus, we would not be selecting agency, research, or practitioner staff at random from the very loose systems in and around each agency; rather, we would be drawing attendants from those groups who had been important to the work of the agency D&U units, and who had had substantial previous contact with the unit. In addition to representatives from the pilot study samples, the D&U staff from each agency were to be invited.

With this brief overview of the larger intent and design, we may move on to a more detailed description of each of the two conferences. The summary comments to follow dealing with the design and process in each conference are drawn from the tapes recorded at each meeting. The problem-oriented products of group work presented below are copies of the charts and documents developed by participants during work sessions. These materials were also distributed to participants after each conference. We will begin our detailed description with the first conference (SRS); when we then turn to the MA conference, we will be able to note changes in our design based on the SRS experiences.

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* We would like to thank Dr. William C. Morris of CRUSK for his valuable assistance in helping us design and implement these conferences.

** Project funds paid for the travel and expenses of non-Federal employees for both conferences.

III. THE SOCIAL AND REHABILITATION SERVICE CONFERENCE

The two day SRS conference was held November 29 and 30, 1972, in Washington, D.C. with twenty-one participants* in attendance. Rough breakdowns of respondents into job groups were as follows:

5 -- SRS Federal policy/planning, research and program administration staff
4 -- SRS Federal D&U staff

4 -- non-Federal D&U staff

3 -- non-Federal R&D staff

5 -- State and Regional staff

There was, however, less clarity of job role division than this list suggests, especially among non-Federal participants, e.g., researchers who are also involved in (or are doing research on) D&U, regional staff who were R&D specialists, etc. The agenda for the conference had been planned roughly along the lines mentioned in the previous section, although the design changed somewhat during the course of the meeting. The following description will concentrate on the process, inputs, and outputs, presenting the products of work groups as they appeared in the flow of the meeting. At the end of the description, we will talk about participants' reactions to the conference, and the suggestions they made for improvement in the format/content.

After introductions, the conference got down to business on the morning of November 29 with a presentation from CRUSK staff about our approach to D&U. This presentation worked from the general to the specific, ending with an elaboration of the current D&U model. Discussion of broader points developed, taking up a portion of the allotted time, before the detailed presentation of the model steps could be made.

With this provision of a framework for D&U, participants then worked alone for a few minutes to fill out a form (Figure 6.1) indicating their perceptions of the D&U areas being done best and worst in SRS now, and the areas most important to them. This activity, and the meetings to follow, were deliberately timed to break up the CRUSK inputs into sessions separated by work by the participants. Homogeneous small groups were formed (e.g., policy, D&U,

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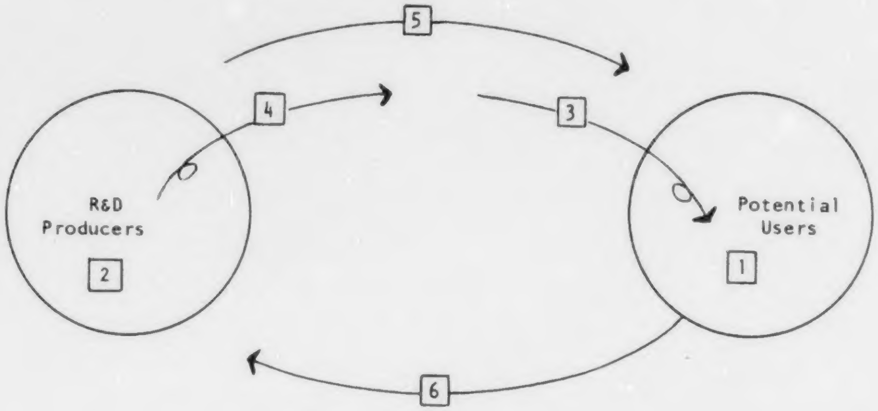
*See Appendix D for complete list of participants.

FIGURE 6.1

CRUSK - UNIVERSITY OF MICHIGAN
Research Utilization Conference
November 29, 1972

RESEARCH UTILIZATION SIX KEY TOPICS

The figure below suggests six major topic areas which emerge when research utilization is viewed as an inter-system problem-solving dialogue. Review the questions posed under each topic and check one for each of the three questions in the left margin. Then jot down examples, observations, or other specifics which might be discussed in the group.



↓(Check One) Done best in SRS now	↓(Check One) Done worst in SRS now	↓(Check One) This is most important topic to me	
1	4	2	1. Effective Performance and Problem-Solving in the SRS Mission Do SRS users (consumers, practitioners, administrators, policy makers) need any help in their day-to-day activity which could come from R&D? (What sort of R&D help do they need?)
7	3	2	2. The R&D Knowledge Base Does adequate knowledge now exist to provide such help? (Quantity? Quality? Relevance? Utility?)
1	5	7	3. Utilization Does existing R&D knowledge get used? (When? How often? How? For what? by whom?)
4	1	4	4. Knowledge Processing Is the existing R&D knowledge adequately translated and packaged for use? (Summarized? Integrated? De-jargonized?)
6	1	1	5. Dissemination Is existing knowledge transmitted to potential users in the best way? (Are there enough books, pamphlets, magazines, journals, conferences, informal exchanges, face-to-face consultations?)
1	6	4	6. Need Communication Do needs of potential users get to the R&D producers? (Is it clear what the needs are? Do these needs influence the work of R&D people?)

practitioners) to tally and prioritize the three dimensions, and to work from this basis to develop a list of problems relating to the highest priorities. The products of the three sub-groups are given in Figure 6.2. It is of interest that the D&U staff see dissemination as being done best in their system, but utilization the worst (and thus the most important area for work). This group then worked on defining utilization problems. Clients or practitioners showed no consensus on most important problems, but did indicate that need communication -- in effect, making the system listen to and heed their needs -- was not being done well. The client group then delved deeper into need communication problems, but in the discussion turned more toward microsystem activities, perhaps as the most efficient way to insure both need communication and solution delivery. Such interactive processes appear closer to a problem-solving model of utilization, a model which has been historically (and as demonstrated in the literature review of Havelock, 1969) the most client-centered approach to D&U. The policy group shifted from topic area to topic area, picking out factors relevant to their needs. In effect they were saying they could not find one aspect of the model which was most important, but rather were interested in all those things which could help them develop and administer better policy.

In the afternoon of the first day, the sub-groups reported their outcomes to the group as a whole, and a clarification discussion followed. At this point, the agenda called for a shift away from the problem-solving sequence and a return to CRUSK inputs, which may have interrupted the flow of work. In the large group setting, CRUSK presented a summary of the pilot survey analysis of linkage, needs, and crisis situations (the same content, but in less depth, as was presented in Chapter V). Following the presentation, an attempt was made to have the large group derive implications from the data and validate the results against their own experiences. It appears, however, that there was not sufficient depth or detail in the data or in the presentation to allow this implication-validation task to work well. Participants were also bothered by the different approaches exemplified by the case studies and the survey. Perhaps they were saying that we had given them a framework earlier (the model), and now were asking them to look at D&U through a different model (linkage or communication), and that this shift did not meet their needs which were to talk about their own experiences and problems in detail.

At this point the group was clearly not ready for more data input, specifically in the form of the survey ratings of importance and actual provision of several D&U factors (the ratings discussed in Chapter VII). Nor had they had sufficient time to think about implications of the data or of the problem statements they had developed earlier. Several comments from the group asked for CRUSK help in diagnosing D&U problems in SRS, and particularly for comparative data on what the four agencies studied were doing in this area. By this time, the D&U model had been presented, but we had not told the group specifically what we had found in their agency relating to the points of the model. This omission was clearly indicated in comments from the group: they could neither interpret our quantitative data, nor begin work on problem solutions without seeing themselves in the model through our eyes, and without some indication of what other agencies were doing.

SRS
Group I - Policy People
Wed. a.m.

FIGURE 6.2

Best	Worst	Most Imp.	Question
	1	1	1. Effective Performance and Problem-Solving
11 (a lot of knowledge, but shaky in some topic areas and not evaluated scientifically, methodologically BUT some good things - more than being used ?)	11	11	2. R&D knowledge base
	1*		3. Utilization
11		1	4. Knowlege processing
1			5. Dissemination
	1	1	6. Need communication

* 2 + 3 = 1

TRANSLATION OF RESEARCH FOR POLICY ACTION

- form of reports, size, presentation, etc.
- research changes intent of work
- findings themselves not liked
- research needs and policy needs

AUDIENCES FOR POLICY

vary by topic area; not sure who is listening, how; soft-sell needed

POLICY MAKER NEED SENSE

SENSING NET TOO NARROW - DON''T LOOK into other models, fields

CHARACTERISTICS OF KNOWLEDGE BASE

- availability - access
- science vs clinical model
- relevance, generality, across time and location
- applicability to system and needs (difficulty in extrapolating knowledge from area to area eg VR - MP, etc.)
- integration w/non-science info (situational; individual case re: clinical model)
- interface of knowledge base, policy and need sensing
- lack of replication, external evaluation

SRS
Group II - Practitioners
Wed. a.m.

Best	Worst	Most Imp.	Question
1	1	1	1. Effective Performance and Problem-Solving
111	1		2. R&D knowledge base
		11	3. Utilization
1		1	4. Knowledge processing
1	1	1	5. Dissemination
1	1111	11	6. Need communication

No. 1 Subtopic of No. 6

New topic - long-range needs.
Gulf between problem solvers and users.
Even best research not utilized.
Practitioners inability to identify his problem precisely.
SRS research historically addressed to agency needs.
Difficulty in turning problems into research projects.
Subsystems may be doing own planning, etc. that may not affect total SRS system.
Circle between universities and SRS self-peretuating.
Have to generate own resources to do research.
Need for short-term planning efforts (6 months).
Information not targetted properly.
Two types of research: SRS funded - not relevant
Not in SRS Research catalogue - social science research - not relevant
No programmed way for SRS to carry out mission.
If state agencies had control over resources, they could make information relevant to agencies.
Research people need to be part of management process.
Need balanced effort between basic and applied research efforts.
Need translation mechanism from basic to applied research.
Operations research - microsystem concept of involvement of staff.
Geographical boundaries affect resources possible.
One RUS per region not enough staff for utilization.

SRS research functions: 1. to do research relevant to a number of states
2. local needs in a community or a state

Consensus on microsystem building - resource allocations to states and regions.

BALANCE: 1. resource allocation: central - regional - state
2. model acceptance
3. microsystem most important - interactive process

SRS
Group III - D&U
Wed. a.m.

Best	Worst	Most Imp.	Question
	11		1. Effective performance and Problem-Solving
11			2. R&D knowledge base
1	1111	~~1111~~	3. Utilization
1	1	11	4. Knowledge processing
1111			5. Dissemination
	1	1	6. Need communication

Need more R&D on utilization, more in terms of applied process than what is/is not used.
Putting needs into researchable terms and without institutional bias.
Need identification as well as need communication. This is foundation for RU.
Knowledge processing: research may be relevant to needs but user can't make transformation.
Practitioners must be made need sensitive.
Knowledge base for SRS is often developmental and not useful for policy implications.
SRS hasn't learned how to coordinate resources for best results.
Power relationships should be considered more.
Model does not adequately emphasize linking.

PRIORITY ISSUES:

1. Measurement of utilization achievement - does it fulfill goals?
2. What are goals? Need to be refined.
3. How to coordinate (also system levels) resources for best achievement of goals. Integration? Decentralization?
4. User involvement in research process.
5. Linkage efforts.
6. Research on factors that promote/impede utilization.

Our original design was modified to present a comparative look at all four agencies in terms of the model on the second morning, together with the rating data. The profiles of SRS and MA ratings were given the next morning, but the discussion which followed did not build on the presentation. Rather, comments were broad and somewhat "goalless." The discussion did become more focused when we began the four-agency comparative discussion, using the model as a framework. We progressed around the steps of the model, indicating what we had seen going on in that area in all four agencies. Participants would then respond with their own experiences and evaluations to flesh out particular points. It became clear that participants were able to make little use of either the quantitative data or of the model framework itself; what was proving most valuable was the chance to hear about their agency and others, and to be able to contribute their own knowledge in terms of D&U activities presented in the model framework.

At this point the general discussion began to move toward solutions -- what to do about problems the small groups had developed, the problems which had arisen during the comparative discussion. Participants were invited to indicate their interest in working on one of a set of problem areas, distilled by CRUSK staff from the previous day's discussion, or to modify the list, if necessary. Sign up sheets were made available, and two groups emerged which were sent to work on solution-building in their area during the early afternoon.

The specific tasks for the two groups were to (1) spend a limited amount of time sharpening the problems in the problem area which they had just chosen; and then (2) to spend the majority of their time developing potential solutions (action steps) for the most pressing problems. A list of potential mechanisms to facilitate and coordinate D&U was given to participants before they formed into their two groups as suggestions or action "idea generators" (the list is presented in Figure 6.3).

A wrap-up session was held at the end of the afternoon, during which the two groups (one which worked on need sensing, the other on solution delivery) presented their outputs to the total group. The newsprint sheets which recorded the groups' work were typed, and are included here as Figure 6.4. These summaries were later mailed to all participants for their use.

The content of these summaries constitutes the most important output of the conference in terms of action statements for the system as a whole. In reading Figure 6.4, however, it is obvious that the statements are not yet specific enough to be considered prescriptions for action. Participants recognized this, and some discussion followed regarding the cyclical process the small groups had followed: one problem area would be followed and pushed toward identification of specific actions, but before this point was reached the group would veer off, bringing in other problems which were related to the one under discussion. In part this may be the effect of problem solving within a very complex field. Also, this phenomenon may represent the fact that the participants did not feel comfortable in their role as solution builders: it is simply much

FIGURE 6.3 Potential Mechanisms to Facilitate and Coordinate Knowledge Dissemination and Utilization

(Suggestive listing - incomplete)

1. Organizational Structuring and Restructuring

    Extension-linking systems
    Overlapping organizations and associations
    Inclusive organizations - professional associations
    Specialized linking organizations (laboratories, demonstration centers, clearinghouses)
    Formal or informal information networks

2. Roles and Functions

    Specialized linking roles:
        -to convey new knowledge
        -to develop knowledge for use
        -to act as catalysts for change
        -to act as consultants on retrieval
        -to act as consultants on change process as a whole
    Revitalizing and altering existing roles

3. Temporary Systems

    Demonstrations
    Seminars (traveling - stationary)
    Research utilization conferences
    Collaborative projects
    Simulation activities (role plays, games, system modelling)
    Planning meetings
    Specialized training focused on knowledge utilization and/or problem-solving

4. Media

    Manuals on knowledge transfer, utilization, or problem-solving process
    Handbooks and compendiums on useful knowledge in given areas
    Training packages
    New journals, newsletters, periodicals, magazines, etc.
    Special columns or features in existing journals, magazines, etc.

5. Information Technology

    Automated knowledge storage and retrieval
    User-oriented information systems
    Human resource banks and consultation referral systems
    Knowledge translation, derivation, recoding
    Knowledge packaging for use

6. Procedural Aids

    Knowledge utilization or problem-solving guidelines, policies
    Knowledge utilization or problem-solving checklists, reordering, remedial devices
    Subsidies for specialized utilization, problem-solving or retrieval activities

FIGURE 6.4

SRS Conference - 2nd Small Group Meeting - 11/30/72
Need Sensing (of Practitioners)

I. Conceptual Framework to Facilitate Need Sensing.

- A. Need for conceptual framework for needs.
  1. We need a statement of management objectives - means by which conceptual framework and integrated system can be developed - e.g., cost benefits, relationship of activities to outcome, roles and working relationships among staff.
  2. Legislative charge as they relate to needs.
  3. Relationship to objectives.
  4. Who sets objectives based on needs.
     - a. Administrators
     - b.
  5. Sifting for appropriateness and prioritizing to avoid being overwhelmed.

- B. How to strengthen need sensing.
  1. Need sensing activities.
     - a. in state agencies.
  2. HEW conduct activities to assist administrative and other people in agencies in need sensing; training directives.
  3. Technical assistance in language to identify needs.

II. Criteria and Measures of Needs to be Defined.

- A. Diagnosis.
  1. Needs of clients - "unmetness"
  2. Clients:
     - a. Handicapped people
     - b. Counselors
     - c. Agency
     - d. Administrative structure
     - e. Community

- B. Identification of needs.
  1. Sensing should be accurate, uncensored and undistorted.

- C. Hierarchy of needs.
  1. Priority and utilization.
  2. Theoretical models - needs expressed in a theoretical model (e.g. Maslow); Field's "sense of agency."

- D. Measurement of Needs.
  1. Closure System - as a single means of measurement is inadequate.
  2. Suggestions: other criteria
     ways to measure client progress
     along dependent to independent line
  3. Recommend: need measurement and manifestation
     assign to an individual within an agency.
     (-) too isolated - no involvement of larger group
  4. Evaluation, assessment, analysis of total rehabilitation programs.

2nd small group, Need Sensing

III. Channels for Expression - All Levels

A. Clients, counselors and administrators (interchange)
  1. Structure for manifestation (expressed by each) of client needs, counselor needs, and administrative needs - and all mixtures.
  2. System to brainstorm problems and cast into hypotheses and sometimes researched.
    Formal structure (channel)
    Informal means (individualized)
      Example: local staff meetings.
  3. Means to meet needs
    a. Directly
    b. Indirectly
  4. Importance of integrated system within state agency with expertise and skills of research to bear on diagnosis and filling of client needs (consciousness of staff) plus other outside resources.

B. To overcome isolation.
  1. Concern re isolation of Feds (central office!) from reality of direct service delivery. State office isolation and divorcement from problems.
  2. Research utilization and information flow "in reverse" - up to the administrator.
    Example: Investigate the media.
  3. The more specific and/or isolated [the need] the less impact on administration.
  4. RU and needs on local level are considered low priority by administration.
  5. Alerting researchers to needs;
    Translation of the expressed needs into research "problem".
  6. Visibility to non-VR agencies.

C. Concepts.
  1. "Coupler" - an individual able to arouse, catalyze, mediate change and identify needs and transmit ideas.
  2. "Advocate" - one to an agency.

SRS Conference - 2nd Small Group Meeting - 11/30/72

Solution Delivery

I. Problem Statement: Solution (Alternatives) Delivery

(NOTE: Some members of the group felt the term "solutions" was presumptuous. They felt that researchers couldn't necessarily deliver solutions, although they could deliver suggestions for alternative action steps for dealing with a problem.)

A. Factors that should be considered in any SRS approaches to solution (alternatives) delivery:

1. adequacy of dissemination media.
2. diversity of clients (service recipients).
3. clients - both agencies within SRS and SRS service recipients.
4. possibility of over-emphasis on dissemination.
   (NOTE: One member felt that too much talk about dissemination *per se* might obscure the problem that getting the information *out* does not necessarily insure that the information will be *used*.)
5. need for screening of information and targetting of information for specific audiences.

B. Final statement of elements of problem:

1. disseminating existing information.
2. finding information that fits needs of different user categories.
3. packaging (e.g., transformation of information and selection of media).
4. user adoption.

II. Problem Resolution

B. Action steps for dealing with the problem of solution (alternatives) delivery:

(NOTE: group members were aware that the time constraints precluded arriving at more specific recommendations and that, in this sense, the following suggestions are not really action steps but specification of areas where action steps should be developed.)

1. develop groupings of research items to give user comparative idea of alternatives and suggest individuals to contact for further information or assistance.

2. identify and differentiate user groups and survey their needs.

3. target dissemination activities for key user groups.

4. organizational analysis.

5. involve key state personnel in utilization.

6. *Transformation* of knowledge on regional level, closer to users, rather than on federal level. (This was further refined to recommend involvement of next user level in transformation activities, whatever that user level is.)

7. Personnel profiles to aid targetting.

8. Further experimentation with seminar method of introducing information to different agencies or other user groups.

9. Development and identification of different dissemination strategies.

10. Development of follow-up and feedback monitoring strategies.

11. Provision of consultation to users.

12. Disseminators should suggest to users alternative methods of implementation.

13. Cannot neglect engineering step of making information fit unique needs of any given user group.

14. Estimation of impact prior to decision to adopt (e.g., simulation).

15. Rationalize reward system for innovation (e.g., verbal approval from state director for innovative behavior, differential payment, travel expenses).
    (NOTE: One member pointed out the limitations of this suggestion, that is, that innovative individuals are usually not conformists within the organization -- they tend to operate on the fringes of the organization -- and administrators tend to reward the more conformist members because, by the nature of their job, they need a certain amount of conformity to hold the organization together.)

16. Report on successful utilization activities with personal recognition of people involved.

17. Personalize utilization process: "People-to-People."

18. Research on impact of different packaging on different targetted groups.

19. Get utilization issues into educational structure (e.g., college curricula on use of research).

20. Develop research from common problems of user group and involve user group in research process from beginning.

easier for any group to continue talking about their problems than to commit themselves to developing solutions to them -- solutions which mean they themselves are going to have to behave differently than they do at present, and which require risk taking and the marshalling of support from both superiors and subordinates. Some specific recommendations for processes did emerge (for example, the moving of transformation activities to a point closer to users), as did recommendations for new D&U tools (e.g., use of telephone as a rapid and informal D&U medium).

Further elaboration and task setting was not permitted by the lack of time available. The meeting came to a rather abrupt close, precipitated by travel schedules and Washington car pool departures, without much discussion of exactly how the group products would be put to use. The SRS D&U staff did indicate that they would try to build the group products into the 1975-1979 "forward plan" for D&U activities which they were then developing.

The final task of the meeting was that of evaluating the conference itself. Evaluation forms were given to participants for them to rate their satisfaction with each facet of the meeting, and make comments. A summary of the evaluations is given in Figure 6.5. These results show that the activities involving the D&U model (its presentation, and D&U activities of the agencies presented in the model context) were relatively well received, though some would have preferred a pre-meeting written presentation of the framework. The problem generation and solution building activities also fared well, although the latter tasks were seen as somewhat too general and too forced by lack of time. The least attractive facet of the meeting was the presentation of the survey results. This analysis was perhaps too long and complicated, and definitely did not relate well to the needs of participants or to the remainder of our inputs.

Several overall evaluation comments stressed the lack of a clear statement of purpose for the conference at the beginning, and others dealt with scheduling, or mentioned that too much material was presented for the time available. There was also a theme of relevance of the materials presented, and that the ratio was too high in favor of CRUSK input to participant input.

Perhaps the most important part of the evaluation were the outcomes participants projected, i.e., the impact of the conference on them once they returned home. There is a wide range here, as might be expected. The most frequent type of comment dealt with applications of some specific portion of the model or concepts obtained in the participant's work; these ranged from planning through dissemination and microsystem analysis. Second in frequency were the "cognitive only" outcomes, those participants who mentioned the conference as an asset to their thinking or knowledge, but made no specific mention of behaviors. Others mentioned such diverse topics as integration of their learning into teaching or training situations, and the value of contacts made at the conference.

FIGURE 6.5
[Compiled]

EVALUATION FORM: SRS Research Utilization Conference

1. How satisfied were you with each of the following aspects of this conference? Please check whether you were:

1) Very dissatisfied
2) Somewhat dissatisfied
3) Neither satisfied or dissatisfied
4) Quite satisfied
5) Very satisfied

and give comments about your answers

1	2	3	4	5
0	1	0	13	1

Mean: 3.9

a. Presentation and discussion of RU model (Wed., a.m.).
Comments:

Too much time allotted; projector/newsprint helpful.

1	2	3	4	5
0	1	2	11	1

Mean: 3.8

b. Discussion, ranking and comparison of major RU issues (Wed., a.m. groups and posting).
Comments:

Small group beneficial; groups facilitated participation.

1	2	3	4	5
2	9	3	2	0

Mean: 2.3

c. Presentation of survey results (Wed., p.m.).
Comments:

Too much time; illusive--interpret/select more; fail to relate results to what I could contribute; too many side-tracks; too long, diagrams too complicated (except graph).

1	2	3	4	5

d. Derivation of implications (Wed., p.m. groups and posting).
Comments:

Omitted

1	2	3	4	5
1	4	4	6	0

Mean: 3.0

e. Presentation on RU in other agencies (Thurs., a.m.).
Comments:

Not much actually presented on RU in other agencies; more detail on what worked where; greater detail; some useful ideas; present in written form and save time for F; relevancy/transferability didn't come through; would like hand-out material; need more formalized presentation and reduced audience participation during it.

1	2	3	4	5
0	3	2	7	3

Mean: 3.7

f. Discussion of ways to improve SRS RU (Thurs., a.m. groups, p.m. posting of alternatives).
Comments:

Small groups reinforce micro-system information exchanges; each small group should deal with entire model; task too open, product too general; here we get down to cases; output lacked specificity; not enough time; good interchange; more time needed; follow up with resolution sessions.

II. Think ahead to your return "back home." What impact do you predict what you did and learned at this conference will have on you and on your work?

Will concentrate on microsystems--collaboration; apply concepts to need sensing in a project; try some of the ideas on dissemination; have a better conceptual model to plan dissemination activities; may have impact on research activities; look at macrosystem activities in region; helpful in planning; nothing immediate--may have long-range benefits.

Contacts for future; contacts; appreciation of how R&D is seen in the "field"; awakened to client needs; increased understanding; conceptualization of model; insights to use in student seminars; curriculum development; training for practitioners re research from utilization focus.

III. What other comments would you like to make about this conference -- contents, processes used, site, scheduling, etc.?

Need more explicit statement of conference purpose, more small groups; purposes not clear enough; stress objectives for the afternoon group; clarify charge to group; purpose obscure, conference intent not clear.

Tighten scheduling, or more time for discussions of SRS RU; smaller group sessions; ideas better than models; too much to cover--schedule revision helped; time tight; too much faculty input in re group input.

Did not address primary SRS problems; discuss some RU case studies; need more meetings not in D.C.

Thank you for your attendance and for your comments!

In summary, we felt this conference was somewhat hampered by the tight scheduling of too much input on our part, and a process which did not give participants a chance to make their own inputs early or often enough. Some of these learnings were built into the design of the MA conference, which was held a week after the SRS meeting. Unfortunately, one possibility, that of giving the participants the conceptual framework prior to the meeting, could not be implemented for the second conference because of lack of time.

IV. THE MANPOWER ADMINISTRATION CONFERENCE

The MA conference was held December 7 and 8, 1972, in Washington, D.C. A rough count gave the following breakdown of the twenty-one participants:*

6 -- MA Federal policy/planning, research and program administration staff

5 -- MA D&U staff

2 -- non-Federal D&U staff

4 -- non-Federal R&D staff (although some were active in D&U)

4 -- State and Regional staff

At the beginning of the conference, as participants arrived, they were asked to answer two questions and to post their large answer sheets around the conference room. The questions were, "what is the most pressing knowledge utilization issue to me", and "what do I expect to get out of this conference?" The responses were used to give participants a chance to identify people with similar interests, and to give the CRUSK staff a feel for the needs of the group. In general, the responses to the first question were vague and abstract, and those to the second centered on a desire for cognitive learning, although some expressed needs for more specific ideas about how to accomplish some (usually broad) task related to their job.

In the introduction to the meeting, we were careful to specify clearly four purposes for the meeting (these were posted and in view during the two days):

(1) to encourage dialogue in the group and between CRUSK and the group about D&U;

(2) to share and confirm data from case studies and linkage survey;

(3) to identify and prioritize problems in D&U in the MA system;

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*See Appendix D for complete list of participants.

(4) to develop first steps for problem solving on important problems.

We stressed that the format was one in which we would strive to blend inputs from both the participants and from CRUSK.

The first major input was the orientation to our work and an introduction to the D&U model, including the fit between the (older) work on identifying theoretical approaches to D&U and the newer model. This presentation was similar to that used during the SRS conference, but shorter.

Next, again following the agenda used for SRS, participants were asked to rate the six D&U problem areas according to best, worst, and most important (see Figure 6.6). Homogeneous sub-groups were formed to tally, prioritize, discuss, and identify problem areas. The outputs of these groups are contained in Figure 6.7. Because of the large number of D&U staff (both Federal and non-Federal), two D&U groups were formed for this task.

There was a feeling in the sub-groups, expressed during their subsequent report back to the large group, that the ratings were "relative"; some participants redefined the "best" category into "least worst." Very little consensual agreement is found in or across the four groups in the three rating areas, with the exception that the policy and administrative group saw utilization as most important, and that the two D&U groups taken together saw the R&D knowledge base as the best (or "least worst") feature of the system. The problems identified by the sub-groups ranged throughout the six questions and over the model steps. In the report-back session the low mention of need sensing as a problem was discussed, and at least one group noted that this area had been given emphasis in their discussions.*

Next, we returned to inputs from the CRUSK staff in the form of the data on ratings of D&U factors, and then presented the major points of the linkage analysis from the MA data in the pilot survey. In the discussion and clarification which followed these presentations, introductory material was used relative to what other agencies were doing in the field of D&U.

The final task of the first day was the beginning of small group meetings, according to sign up sheets, to work on problem formulation in selected D&U areas. The groups were encouraged to spend the remainder of the first day defining problems, and then to begin the second day in the same groups, but concentrating more on developing solutions to those problems. These small groups were not as representative of all participant job roles as we had hoped, however, since we had lost all but two of the Federal policy and administrative participants by the end of the first day. Loss of these individuals may have curtailed the transfer of need and problem statements from others in the D&U system directly to the policy-making level, an advantage normally gained in heterogeneous small group problem solving.

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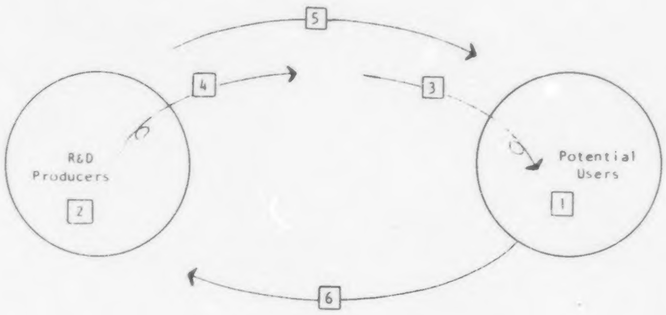
* We must look ahead to note that no one signed up to work on this area in the problem-solving sessions on the second day.

FIGURE 6.6

CRUSK - UNIVERSITY OF MICHIGAN
Research Utilization Conference
December 7-8, 1972

RESEARCH UTILIZATION SIX KEY TOPICS

The figure below suggests six major topic areas which emerge when research utilization is viewed as an inter-system problem-solving dialogue. Review the questions posed under each topic and check one for each of the three questions in the left margin. Then jot down examples, observations, or other specifics which might be discussed in the group.



Check One: Done best in MA now	Check One: Done worst in MA now	Check One: This is most important topic to me	
0	2	0	1. Effective Performance and Problem-Solving in the MA Mission Do MA users (consumers, practitioners, administrators, policy makers) need any help in their day-to-day activity which could come from R&D? (What sort of R&D help do they need?)
4	1	2	2. The R&D Knowledge Base Does adequate knowledge now exist to provide such help? (Quantity? Quality? Relevance? Utility?)
0	1	8	3. Utilization Does existing R&D knowledge get used? (When? How often? How? For what? By whom?)
2	3	4	4. Knowledge Processing Is the existing R&D knowledge adequately translated and packaged for use? (Summarized? Integrated? De-jargonized?)
5	4	1	5. Dissemination Is existing knowledge transmitted to potential users in the best way? (Are there enough books, pamphlets, magazines, journals, conferences, informal exchanges, face-to-face consultations?)
1	3	1	6. Need Communication Do needs of potential users get to the R&D producers? (Is it clear what the needs are? Do these needs influence the work of R&D people?)
2	3	2	7. Microsystem Is there adequate 2-way communication between researchers and users on problems and solutions?
			8. Macrosystem Is there a functioning national system for research-based problem-solving in the manpower field?

FIGURE 6.7

LABOR CONFERENCE
Dec. 1972

Group I - Policy and Administrative

Best	Worst	Most Imp.	Question
	11		1. Effective performances and problem solving in MA mission. -getting informed decision making -the problem
1	1		2. The R&D knowledge base -evaluate specific programs but not the entire system -give program rather than policy advice -lag time - re policy constrained now
		1111	3. Utilization -rewards missing for our work in getting utilization at policy level -how make them receptive (e.g., training for policy makers)
1	1	1	4. Knowledge processing -e.g., to program people - R&D doesn't fit for them
11			5. Dissemination -goose to community (1000) less to development community congressmen own policy makers -how to develop an improved system to reach new decentralized system
1			6. Need communication -no time for adequate surveillance
	1		7. Microsystem
	1		8. Macrosystem -training for new political appointeees re run system, user of R&D -develop linkages between information sources and policy decision (working on this now)

LABOR CONFERENCE
Dec. 1972

Group II - Practitioner
Thurs. a.m.

Best	Worst	Most Imp.	Question
			1. Effective performance and problem solving
1			2. The R&D Knowledge base
	1		3. Utilization
	1	11	4. Knowledge processing
	11	1	5. Dissemination
			6. Need communication -as users - no one asks us our needs
11			7. Microsystem -conference and conventions are most helpful for dissemination of info
1			8. Macrosystem

Problems

1. No communication from MA (we're not part of system - not receiving - except in informal sessions outside of system
2. No mechanism to feed knowledge stored at fed level to region
3. Existing knowledge is not packaged so we can use it - not transformed so can be used: repts too long to read
4. Breakdown of our (local) needs communication
5. Turnover of programs is so rapid have no time to assimilate them at local level
6. Knowledge base at fed level have quantity, but not necessarily quality
7. Imbalance in emphasis of programs with no carryover to sustain exch.
8. Knowledge we have isn't used by decision-makers (e.g., Vickery report)
9. Decision makers either ignore knowledge or adopt it in whole and change again quickly when it doesn't work.
10. Lack of training and refresher training at generalist level so can serve all people not just specialized programs. (me personally)

Group II

Priority Items

Least worst	Worst	Most Imp.
1. Microsystem (occasional conferences and conventions in which there is informal dialog outside of formal sessions)	1. Knowledge processing and Dissemination (see: problem list items)	Stabilization of need definition*
	2. Utilization	

*Emphasis: "Reoriented so much is disoriented"
goals have shifted - problem redefintion

Labor
Group III - D&U
Thurs a.m.

Best	Worst	Most Imp	Question
			1. Effective performance and problem solving
111		1	2. The R&D knowledge base
		11	3. Utilization
1			4. Knowledge processing
11	1		5. Dissemination
	11		6. Need communication
	11	11	7. Microsystem
	1	1	8. Macrosystem

1. Macrosystem - no national organization
2. Microsystem - can be used to involve user in research process from beginning
3. R&D knowledge base - adequate to quite good
4. User needs - feedback from service recipients important
5. "User" - MA user groups extremely diverse
6. Communication with policy makers badly done and important because they have power over funds
7. MA has had particularistic emphasis in RU activities - need to be developed into more generalized system - macrosystem
8. Model sections 1, 7, 8 are universal problems. Too general to be worked on usefully
9. Too much information
10. Quality of research or of dissemination does not insure utilization
11. Lack even a common terminology with which to discuss utilization

AREAS Where Most Problems Exist: (Note: This is not intended as an exhaustive list)

A. Transaction between dissemination and utilization: Linkage? adaptation?

B. Political issues of KU - "We're not paying enough attention to these"

C. Define what R&D can do - can't solve all our problems with R&D

Labor
Group IV - D&U
Thurs. a.m.

Best	Worst	Most Imp.	Question
			1. Effective performance and problem solving
1111		1	2. The R&D knowledge base
	11	11	3. Utilization
	1	1	4. Knowledge processing
1	1		5. Dissemination
	1		6. Need communication
			7. Microsystem
		1	8. Macrosystem

R&D knowledge base best because:

1. MA and other R&D knowledge
   good quantity in most areas
   but some questions re quality
   to define problem, etc., reading,
   coping skills, motivation

Utilization

Translation from basic to applied - bridges needed
Worst: little evidence of use
funding and dissemination not enough. Must build in utilization and technical assistance
overemphasis on role of information in triggering change
don't know what gets used
proprietary interests may create static
end product, reflects deficiencies in other links

Knowledge processing
problem of knowing how to package
software and hardware agents need guidance
need to change roles - users and utilization
not enough translation
too much jargon
but "jargon" acceptable for precision and redefinition of concepts

Dissemination
available information sits on the shelf
need face-to-face sessions
doesn't get planned or followed up

Group IV - D&U

Need communication
- major obstacle is insufficient understanding of needs of operating people - either perceived or real
- R&D insulated from user involvement

Macrosystem
- further development of formal dissemination system

Microsystem
- need for a model (both conceptual and working)

Participants worked in their small groups for the majority of the second day, returning for a report back and wrap-up session in the afternoon. The group products, in the three areas of utilization, knowledge processing, and microsystem building, are given in Figure 6.8. Most groups mentioned the "cycling" phenomenon discussed in the SRS section: small group members would begin moving toward the development of action steps in one problem area, only to introduce related problems which would then be discussed in the abstract. In part, they felt that this might have been a result of the complex interaction of problems in D&U. However, it was clear that some participants would have been happy to have spent all of their time defining and talking about problems themselves, rather than being pushed to design solutions. This problem might have been reduced had we had the continued participation of the policy and administrative group, and had they legitimated the task of developing real steps for change in the system. It was also suggested by CRUSK staff that part of the problem might be corrected if the group were able to develop better problem-solving skills before undertaking the task.

One reasonably specific recommendation did come from the group working on utilization problems. This suggestion was for the development of a new role of "information specialists": persons to work at the regional level charged with communicating D&U information to line managers in the MA system. However, the group felt that more information and constituency building were required before such a step could be advocated. In the discussion which followed, the notion of a pilot test of this role in one region was brought forward. The similarity of this job to that of the SRS Research Utilization Specialist also was pointed out.

As in the SRS conference, the final step of the meeting was that of evaluating the conference itself. A summary of the comments is given in Figure 6.9. In general, the evaluations were somewhat lower than in the SRS conference, except for the survey presentation (which had been kept very short), and which was rated highest in this conference. The fact that the inter-agency comparative materials were linked into this presentation appears, from the comments on this rating, to account for much of the difference. It is interesting that the problem-solving activities, which were second in high ratings only to the model presentation in the SRS conference, were the lowest rated in the MA meeting. It becomes apparent from the comments, however, that the frustration of attempting problem solving is the difficulty, rather than the idea of solving problems itself.

Turning to the general evaluative comments, again we found several remarks pertaining to scheduling, timing, facilities, etc. The more general comments mentioned problems ranging from participant selection, their cooperativeness, etc., to those indicating that participants might have been more satisfied had they been given more responsibilities in designing the process of the meeting. Again, the desire for more descriptive and comparative data was expressed.

FIGURE 6.8

Labor
  Utilization - Small Group
  Thursday afternoon and Friday

A. Utilization

Problems:

-getting decision maker to use knowledge (form not useful?*)
  *even after being repackaged

-staff capacity

-guidelines, regulations, etc. don't permit us enough flexibility

-finding out where utilization is now going on: tracking

-what is definition of utilization, e.g., how does D&U staff decide when knowledge has been utilized? when others take over; never satisfied; development of program which is transferred to user system and replicated

-money--key in reaching decision makers

-decision alternative of adopt vs "do what I'm supposed to do"

-role definition problems?

  -what does role allow/encourage person to do in terms of going out to give/get information

-building into research project a utilization role for the researcher (first need mechanism to decide what appropriate utilization role should be for given research/project)

-D&U staff forced to take unevaluated products and get them used

-with decentralized system regional office should be more active--but RU is still national
CRO's don't want to use research

-lack of support staff (secretary) in D&U unit

-No clout--D&U, USES
  -no operating arm

-difficult to reach political appointees within regional office areas

- local area Manpower planning advisory board operations within different city power structures (e.g., strength of mayor)
  - how to get decision maker here to make decisions based on valid knowledge
  - we (D&U) will have to know local conditions and needs better (e.g., labor market information)

- have not reached line authority - D&U gets to staff people (e.g., manpower administrators at WIN, regional, state levels)

- difficulty in establishing regional R&D utilization contact person

Wrap-Up

1. Reaching key decision makers
   - line administration at all levels
   - Washington, state, regional offices
2. Capacity
   - staff, secretarial
3. Utilization roles for researchers
4. Tracking utilization efforts

R&D Linker Staff - Decentralized

Brainstorm Alternatives for:
more than one R&D guy per regional office

1. Decision makers potentially reached
   - a. regional MA
   - b. state agency administrators (employment services)
   - c. program sponsor/operator (NYC, CEP, etc.)
   - d. area manpower planning (potential)
   - e. pressure groups
2. Linkages
   - field to Washington R&D (tie to technical assistance and training)
   - R&D to decision makers

3. Location

Regional office (e.g., SRS, R&D specialist) Use existing system-
TAT centers other agencies
State (e.g., SRS RU specialist)
In area plan groups (±300)

How to demonstrate need for new role, i.e., show lack of information flow/use to DMA, RMA, etc.

-document results from present projects
-collect experiences of regional office project, R&D, etc. staff which show the gaps--present in way a task force does?
-use our work here, as a group.

Volunteer region to pilot role.

B. Labor
Knowledge Processing - Small Group
Thursday afternoon and Friday

Problem:

Getting users (arbitrarily limited to state and local level) to adopt R&D findings.

1. going through existing non-federal associations with existing dissemination systems.

2. go through regional office because RMA's control funds

3. multi-agency network -- tie in with SRS, OE, etc. for information-technical assistance, etc.

4. direct access to users - with some items

E&D project in regional office to find out how to better use regional office in R&D dissemination and utilization

-tie research in with needs
-cassettes, video, etc.
-identify user for particular research item
    -find out who's doing what in organization - subject areas
    -special conferences at regional level

HOW? Who? It depends!

Refined Problem Statement

1. Development of criteria for identifying users; use of research base in this task.

2. Implementation of criteria

USER GROUP:

Knowledge processing group

How do we get users to adopt successful training program - users are on all levels - federal, regional, state, and local

Knowledge Processing

3 general categories of problems within knowledge processing area, ranked according to priority:

1. users - identifying, surveying needs, etc.
2. system constraints - funds, resources, politics, etc.
3. media (both media and communication channels)

1. User category: Problems

   - knowing enough about users to know how to package information;
   - getting information into form and language that users can understand and use;
   - finding out how users integrate research knowledge with other things they know;
   - finding out how users transform information into knowledge;
   - identifying users who could benefit from information and packaging it to be most usable to them;
   - involvement of user in R&D process from start and at every level:
   - stimulating users to actually apply knowledge;
   - making sure top-level people know what the field people are doing;
   - narrow definition of knowledge. Researchers are not the only knowledge producers; users produce forms of knowledge also.

2. System Constraints Category: Problems

   - inaccessibility of people who control funds. They talk to their own level of people and other levels can't get access to present views, etc.
   - knowledge processing strategies must take into account the "pecking order" - status problems;
   - need for interagency training and information exchange (there are overlaps and duplication of effort and responsibilities).

3. Media Category: Problems

-what are appropriate media for what kinds of information and audiences;
-forms of packaging must be convenient to carry around, etc.
-Re Tabl[illegible]. Why aren't things happening in the various low-interact[illegible] channels?

Unclassifiable 'Overview' Problem

-what are criteria for choices that must be made when selecting knowledge to be disseminated?

Criteria for Solution-Building

1. specificity
2. personally involving
3. realistic; capable of being accomplished
4. observable; measurable
5. other

Specific successful WIN training program - How do we disseminate these results to field people on federal, regional, local-state levels who actually run the program?

Alternative Solutions:
Specify in research contracts how information will be used--define specific kinds of people who can use it and how they can use it. "How to" manual. Contractual requirement that contractor have orientation period in the field to understand user needs.

1. categorization of criteria - different ones for different audiences, products, etc.

2. specific instructions for action with piece of information

C. Labor
Microsystem - Small Group
Thursday afternoon and Friday morning

MICROSYSTEM GROUP

1. Overload { each element
on policy makers
on linkers } Reach enough people without swamping them

2. Dimensions of microsystem - spectrum

3. Different system for different users

4. Internal communication of users

I. Regional Utilization Network Conference

1. Knowledge users and needs considered separately instead of produced with user in mind. (e.g., why be concerned with users and utilization)

2. Manpower planners (governors and mayors offices)

    Lack clout
    Duration
    Don't perceive self as disseminators

3. Presentation of information
    (Knowledge processing in transformation - how many different kinds can be handled)

4. Lack of personnel with writing skills and resources - poorly prepared material - user not served well

II. Some groups for which establishing linkages is problematic, for others not.

Problem of their perceiving our utility to them - different attitudes
- -building trust
- -policy formulation types are problematic
- -operating groups are not
    - --need communication for policy makers problem
    - --presentation to them is critical
    - --personality problems
    - --bureaucratic problems

(Courtship of
policy makers
into a
microsystem)

III. "Courtship" - Local Resistance to Research

- -fears that it is evaluation
- -lack of trust of researcher
- -overload claim
- -defensiveness--lack of openness and cooperation
- -poor report rewards for them --little or no feedback
- -imposition rather than joint effort

FIGURE 6.9
[Compiled]

EVALUATION FORM: MA Research Utilization Conference

1. How satisfied were you with each of the following aspects of this conference? Please check whether you were:

1) Very dissatisfied
2) Somewhat dissatisfied
3) Neither satisfied or dissatisfied
4) Quite satisfied
5) Very satisfied

and give comments about your answers

1	2	3	4	5
0	2	4	5	1

Mean: 3.4

a. Presentation and discussion of RU model (Thurs., a.m.).
Comments:

Too abstract; participants already knew subject area; participants (non-D&U) should have been briefed on report on model before; not tied in with actual problems; "probably useful for providing a common understanding base to start from, but not exactly inspiring."

1	2	3	4	5
1	0	4	6	1

Mean: 3.5

b. Discussion, ranking and comparison of major RU issues (Thurs., a.m. groups and posting).
Comments:

Group composition deficient to task, needed more policy makers and administrators; should have had more discussion by total group of postings.

1	2	3	4	5
0	2	2	6	2

Mean: 3.7

c. Presentation of survey results (Thurs., p.m.).
Comments:

Good comparison review; good material, content rather well organized, graphic aids well done; need CRUSK's analysis of results.

1	2	3	4	5
☐	☐	☐	☐	☐

d. Derivation of implications (Thurs., p.m. groups and posting).
Comments:

Omitted

1	2	3	4	5
☐	☐	☐	☐	☐

e. Presentation on RU in other agencies (Fri., a.m.).
Comments:

Omitted

1	2	3	4	5
2	5	2	2	2

Mean: 2.8

f. Discussion of ways to improve MA RU (Fri., a.m. groups, p.m. posting of alternatives).
Comments:

Disappointed group could not at least begin to define one problem in utilization and suggest solutions for it; some of the most useful part of conference, needed more user participation; "conference convenors need more congenial way of 'coaxing' thought out of participants, but they were 'screwed' as always in in-city conference by heavy fall-out of senior (status) MA participants"; as new members arrived focus on problems and solutions changed; good start, but unless there is some direct follow through, simply another exercise in futility.

II. Think ahead to your return "back home." What impact do you predict what you did and learned at this conference will have on you and on your work?

Confirmed necessity that R&D must be accompanied by statements as to how these findings will help meet user's needs in resolving their problems.

More emphasis on utilization activities for project; may get some representation for utilization in one regional office.

Better expression of R&D local needs; more sensitive to user needs and reactions.

In long run, a mechanism for conveying at least a part of the R&D action to field; more consciousness of R&U department and different look at materials that come across my desk; reinforced about widespread concern about lack of adequate utilization knowledge, at least I know I have a referent group.

Will be useful in training; review research material to see if can be applied more directly in local area manpower planning; an "insidious" influence on my behavior in this and related areas; stimulation to reconsider and replan; general suspiciousness about conferences.

III. What other comments would you like to make about this conference -- contents, processes used, site, scheduling, etc.?

Better care in selecting participants; content and processes which were planned were OK, however, not all participants understood (or cooperated with) what was expected; conference format was autocratically imposed, suggest more participation in planning conference procedures by participants, more emphasis on how other agencies deal with specific problems; more input from Bill Morris; good--follow-up imperative, suggest visiting some successful projects to either confirm or disagree with some of the problems stated in this conference.

Longer conference, more concrete solutions to utilization problem could have been proposed; more time for "sink-in" of new materials, "new" ways of thought engendered or rekindled in participants; tight schedule, had to absorb new terms, vocabulary, and people in unfamiliar areas of work; break earlier, needed to get back to office to pick up pieces; main conference room too hot; better physical facilities; get out of D.C.

Small group work and stimulation of small sessions was well done; tasks never defined in practical terms, "What is R&D?," jargon, Washington people (ivory tower academics) never shown off to worse disadvantage, were not allowed to get down to practical matters, felt so forced to conform to arbitrary rules that creativity inhibited; division of subjects for discussion seemed unreal, this skewed the whole thing.

Thank you for your attendance and for your comments!

Finally, the question on use of conference learning back home shows the MA respondents to have had somewhat less of a tendency to turn their learning into concrete expectations than did those at the SRS conference. Still, however, sensitivity to concepts and other groups, and the value of the conference in augmenting communication per se are mentioned more often than are behavioral changes. We would be well advised to take the advice of some of the participants, as seen in the evaluative comments, that follow-up is essential if the experience is to be more than an "exercise in futility." At the meeting, and subsequently in reviewing the group products and evaluation forms we have sensed a real desire on the part of many participants that the outcomes of the conference actually go somewhere, and that someone take the responsibility to move the rudimentary problem solutions toward the action stage. This real commitment to action would, no doubt, relieve many of the more negative feelings expressed in the evaluations, particularly the relatively low evaluation of problem solving as a rewarding activity in the MA system.

V. CONCLUSION

We will not attempt to recap the major outcomes of each of the conferences here, since so much space above has been devoted to just this. Rather, we would like to conclude with a note on interface conferences as a potentially valuable micro-system building activity, in this case, development of a micro-system to work on macro-system D&U problems. These two sets of conference participants may be seen as an important core for a continuing D&U problem-solving activity. Their diversity in job role helps guarantee they could serve to bring together all of the diverse perspectives on the D&U process in the system. They would serve as a useful sounding board for potential changes, a legitimating group for action trials, and a source of support for individuals trying to implement change on their own.

Such use of these groups would encounter, possibly, different difficulties in the two agencies. In SRS the group would have to work hard to develop a sense of community beyond the D&U process itself, given the content-research-program diversity in the system. In MA, the group would have to work hard to interest top level policy makers in actively participating in the group, and such participation is essential for the group to keep its active members from being cooled out by the frustrations of the change-building process itself.

It was a matter of some frustration to the CRUSK staff that the MA conference received lower overall evaluation than the previous SRS conference, this despite our greater effort and care in preparation and our redesign of lowest rated segments. Subjectively, we felt that we were doing our job better the second time around. This was confirmed for the data presentations but not for any other segment. We also felt that MA participants were more critical, more dubious about group problem-solving, and less interested in building a collaborative network with each other. They also seemed to expect that all inputs should come from CRUSK rather than from themselves.

It is not at all clear to us why these differences between the two conferences emerged. It may be that Manpower and SRS systems are simply different in these respects. It may also be that the peculiar mix of 21 individuals from the two systems represented a collection of very different personalities. On the other hand, it may be that the CRUSK team performed more poorly than their self-perceptions would allow them to believe on the second occasion. We have also cited the attrition rate of higher level personnel in the second conference which may have disrupted or demoralized those remaining.

Clearly it is important to be aware of these differences and to consider the relative receptivity to problem-solving and D&U conferences by different systems since such reactions will have great implications for the overall strategy of the federal D&U unit in an agency like SRS versus another agency like Manpower.

CHAPTER VII

THEORY VS. PRACTICE

One major objective of this project was to compare overall strategies and philosophies of change as exemplified in different research dissemination and utilization systems. The foundation for such a comparison was laid in an earlier work (Havelock, et al., 1969) which reviewed the literature on change and identified three clusters of change ideology from an analysis of twenty-four prominent theories (Havelock, et al., 1969, Chapter 10). In this chapter we will attempt to compare propositions derived from previous theory and research with existing attitudes and perceptions of reality exemplified in the four agencies and (for two of them) their associated networks. The Chapter will be divided into two sections. The first compares the four agencies on their responses to a 20 item checklist representing various dimensions of ideology and strategy. In the second section, we propose a ten-part rating schema for analyzing important process issues in a D&U system and test this schema by means of a content analysis of interview responses from the Manpower Administration interviews.

I. DIMENSIONS OF IDEOLOGY AND STRATEGY

A. BACKGROUND AND RATIONALE

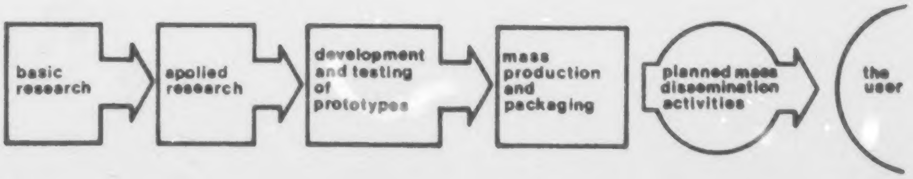
As noted above, there is a considerable bulk of literature dealing explicitly or implicitly with theories and strategies of change, innovation, dissemination, and utilization. For example, Chin and Benne (in Bennis, et al., 1969, Chapter 1.3) identify some sixty theories of change, clustering them in three broad categories of "rational-empirical," "normative-reeducative," and "power-coercive." In our previous work (Havelock, et al., 1969), we derived a similar schema in attempting to summarize findings from over 1,000 studies and at least 100 different theoretical contributions. We found that most of the strategies discussed in these sources could be grouped conveniently under three headings which roughly fit the designations, "Research, Development and Diffusion," (RD&D), "Social Interaction" (S-I), and "Problem Solving" (P-S). It was not our intention to recommend any one of these models over any other, but each seemed to represent a distinct, important, and valid perspective on the process as a whole. We further proposed that the most satisfactory strategy of D&U would take adequate account of each perspective. Because these clusterings were of such importance in the thinking which led up to this four agency study, a brief synopsis is included below by way of introduction to our survey findings.

1. Research, Development, and Diffusion (RD&D)

This model is guided by at least five assumptions. First, it assumes that there should be a *rational sequence* in the evolution and application of an innovation. This sequence should include research, development, and packaging before mass dissemination takes place. Second, it assumes that there has to be planning, usually on a massive scale over a long time span. Such planning and ordering of stages from initiation to the achievement of stated objectives allows for systematic budgeting, monitoring, and scientific evaluation at each stage. Third, it assumes that there has to be a *division and coordination of labor* to accord with the rational sequence and the planning. Fourth, it makes the assumption of a more-or-less *passive but rational consumer* who will accept and adopt the innovation if it is offered to him in the right place at the right time and in the right form. Fifth, the proponents of this viewpoint are willing to accept the fact of high initial development cost prior to any dissemination activity because of the anticipated long-term benefits in *efficacy and quality* of the innovation and its suitability for *mass audience dissemination.*

Prototypes of this RD&D model are presumed to exist in industry and agriculture. Figure 7.1 provides an outline of its major components.

FIGURE 7.1 The Research, Development, and Diffusion Perspective


basic research
applied research
development and testing of prototypes
mass production and packaging
planned mass dissemination activities
the user

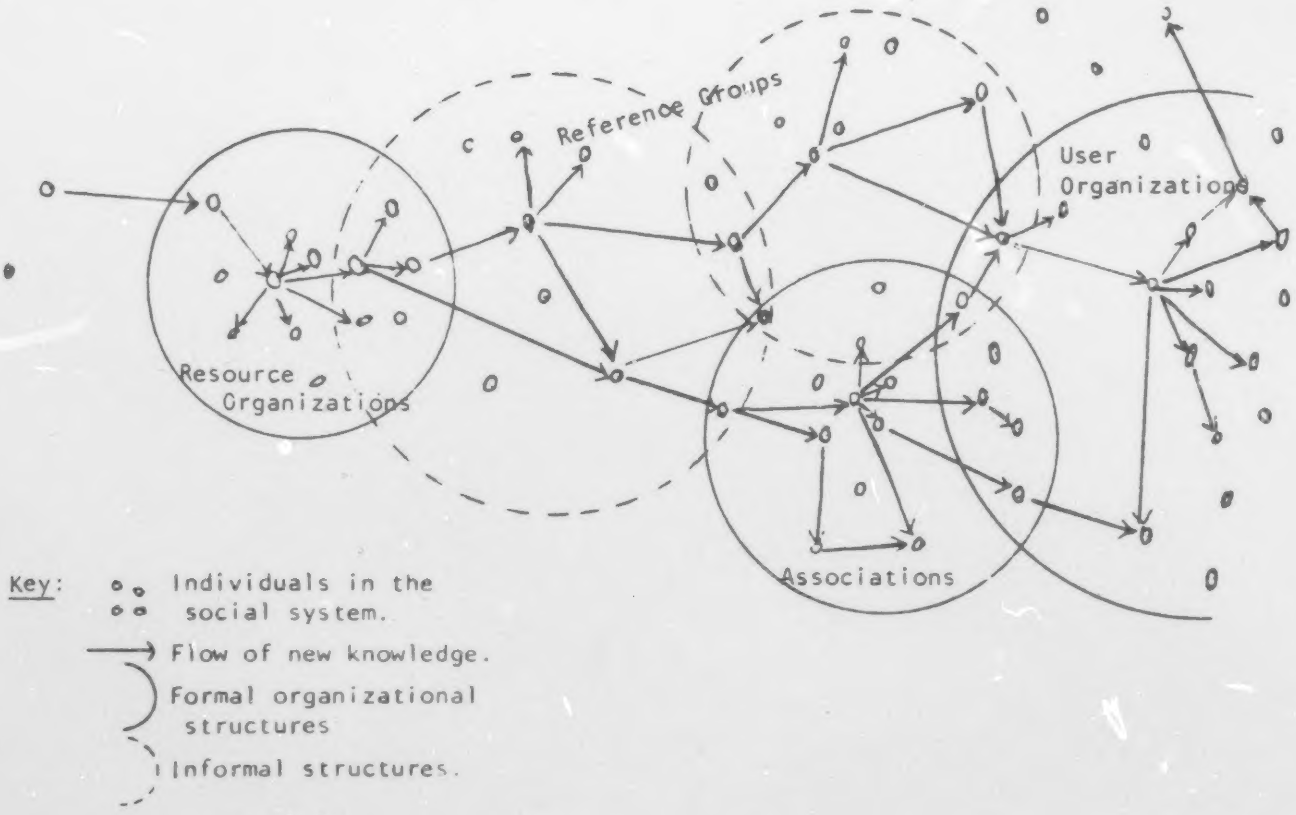
With regard to federally supported R&D in education in the mid and late 1960's, major advocates of this viewpoint have been Henry M. Brickell (1961), Francis S. Chase (1968), and David L. Clark and Egon Guba (1965 a and b).

2. Social Interaction (S-I)

This model places emphasis on the patterns by which innovations diffuse through a social system. Five generalizations about the process are usually emphasized and are supported by empirical research from educational, medical, political and rural sociology and from anthropology, communication, marketing and public health: (1) that the individual user or adopter belongs to a *network of social relations* which largely influences his adoption behavior; (2) that his *place in the network* (centrality, peripherality, isolation) is a good predictor of his rate of acceptance of new ideas; (3) that *informal personal contact* is a vital part of the influence and adoption process; (4) that *group membership and reference group identifications* are major predictors of individual adoption; (5) that the rate of diffusion through a social system follows a *predictable S-curve pattern* (very slow beginning followed by a period of very rapid diffusion, followed in turn by a long late adopter or "laggard" period).

Figure 7.2 is drawn to illustrate some of these points.

FIGURE 7.2 The Social Interaction Perspective

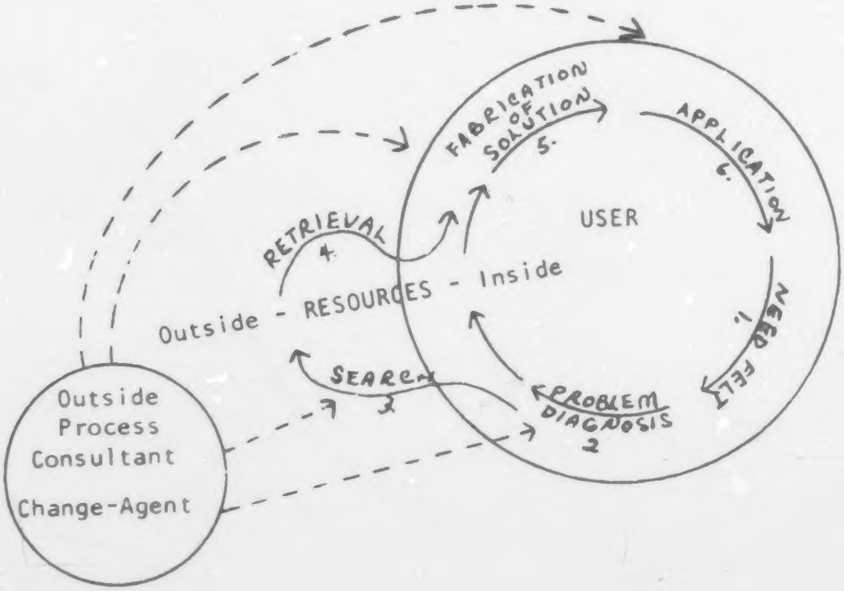

Reference Groups
User Organizations
Resource Organizations
Associations
Key:
Individuals in the social system.
Flow of new knowledge.
Formal organizational structures
Informal structures.

Major contributors to the S-I research tradition have been Coleman, Katz and Menzel (1966), Ryan and Gross (1943), Lionberger (1960), E. Rogers (1962, 1970), and Mort (1964).

3. Problem Solving (P-S)

This model rests on the primary assumption that innovation is a part of a problem solving process which goes on inside the user. Problem solving is usually seen as a patterned sequence of activities beginning with a *need,* sensed and articulated by the client, which is translated into a *problem* statement and *diagnosis.* When he has thus formulated a problem statement, the client-user is able to conduct a meaningful *search and retrieval* of ideas and information which can be used in formulating or selecting the *innovation.* Finally, the user needs to concern himself with *adapting* the innovation, *trying out* and *evaluating* its effectiveness in *satisfying* his original need.

FIGURE 7.3 The Problem Solver Strategic Orientation


FABRICATION OF SOLUTION
5.
APPLICATION
6.
USER
NEED FELT
1.
PROBLEM DIAGNOSIS
2
SEARCH
3
RETRIEVAL
4
Outside - RESOURCES - Inside
Outside Process Consultant
Change-Agent

The focus of this orientation is the user, himself, his needs and what he does about satisfying his needs. The role of outsider is therefore consultative or collaborative. The outside change agent may assist the user either by providing new ideas and innovations specific to the diagnosis or by providing guidance on the process of problem solving at any or all of the indicated stages (as suggested by dotted arrows of Figure 7.3).

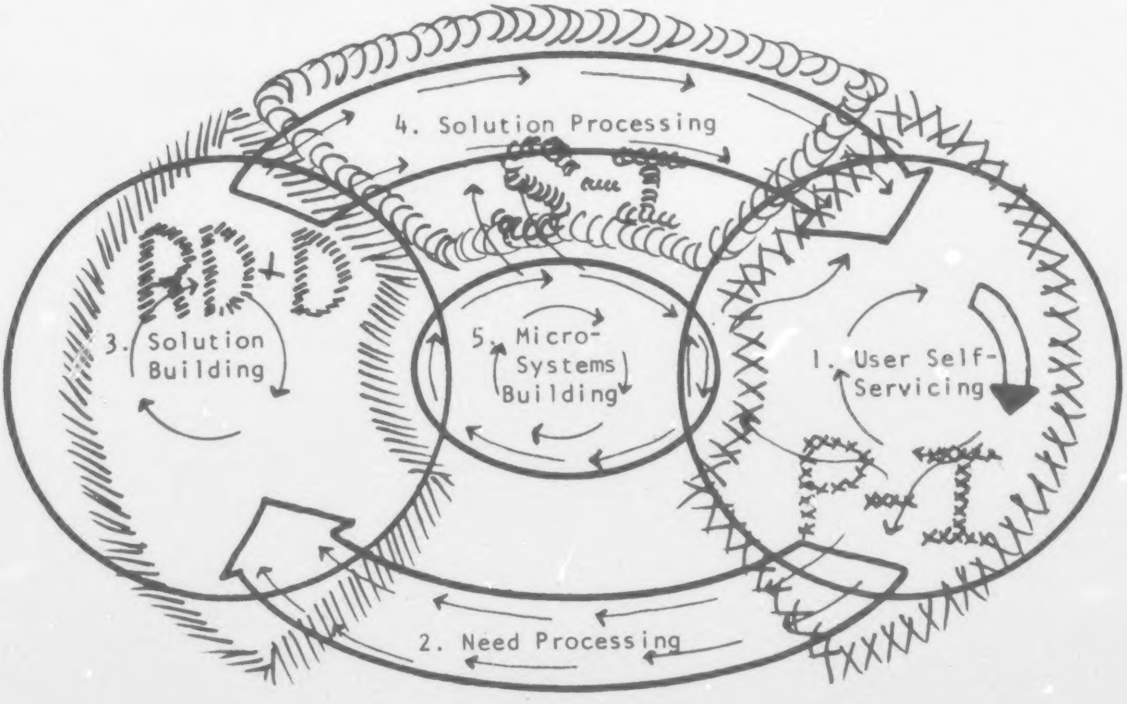
At least five points are generally stressed by advocates of this orientation: first, that *user need* is the paramount consideration and the only acceptable value-stance for the change agent; second, that *diagnosis* of need always has to be an integral part of the total process; third, that the outside change agent should be *nondirective,* rarely, if ever, violating the integrity of the user by placing himself in a directive or expert status; fourth, that the *internal* resources, i.e., those resources already existing and easily accessible within the client system, itself, should always be fully utilized; and fifth, that *self-initiated and self-applied innovation* will have the strongest user commitment and the best chances for long-term survival.

A few of the major advocates of this orientation are Lippitt, et al. (1958), Watson (1967), Jung (1970), G. Caplan (1963), and C. Rogers (1951, 1967). Most of those who belong to this school are social psychologists in the group dynamics-human relations tradition.

How Perspectives Can Influence D&U Agency Strategy

These three perspectives were very useful to us in constructing the model of analysis used in this project to compare functions in the four agencies (see again Chapters 3 and 4) because each focuses on a particular segment of the macrosystem. Figure 7.4 is drawn to suggest the overlapping sectors of concern and emphasis represented by each.

FIGURE 7.4 Macrosystem Emphases of Three Change Perspectives



One could imagine three very contrasting types of D&U agencies based on these three perspectives. An RD&D-oriented agency would stress research quality, validity, and reliability; it would probably have a few large projects that were very carefully planned and executed through competitive contracts to meet very specific development objectives determined by policy makers from quantitative needs assessment. There would be much emphasis on both screening and packaging for specified users.

An S-I oriented agency would be concerned more with transmission than transformation; it would have its own newsletters, journals, and monographs, but it would also seek continuously to place stories and articles based on R&D in various professional and private-sector media deemed to be influential with various identified target populations Further it would continuously seek out key persons among practitioner groups and researchers, attempting to involve them in dissemination efforts through conferences, consultations, and grants; it would also make sure that its own staff members regularly attended professional meetings, delivering papers and appearing on panels side-by-side with the researchers. An S-I-oriented D&U agency would also be likely to develop a special cadre of field agents who would "ride circuit" to opinion leaders in various parts of the country.

Finally, a P-S-oriented D&U agency would focus its efforts on consultation with practitioners and subsidies to user organizations for self improvement and innovation; grants and contracts with the R&D community would emphasize joint definition of project objectives by practitioners and major participation by affected parties in project planning and decision making. There would be little emphasis on past research or on disseminating or getting use of particular R&D products.

Measuring D&U Ideology

Subsequent to the literature review and formulation of these three ideological clusters, we developed a series of statements about various aspects of D&U which could be used as a rating scale to measure attitudes of persons in various roles toward D&U issues. Items on the list were derived from the main tenets of these three orientations. The list was first used as a rating scale by a group of 50 nationally-recognized experts on change process at Clinton, Michigan in May of 1970. While all items were generally endorsed by most of these participants, we discovered that there was a clear division and clustering of opinion regarding emphasis which corresponded closely to our prediction of three perspectives (Havelock and Havelock, 1973, Chapter 1).

In 1971, a revised list of abbreviated items was presented to a national sample of 353 school superintendents as part of a mailed survey on innovation process. Results of this study confirmed our expectations in two important ways. First of all, the list was strongly endorsed as a good and complete summary of important procedural issues in innovation and a good checklist for innovation managers. Secondly, we found that items clustered in a manner very similar to the three "perspectives" hypothesized earlier. In other words there appeared to be three ideological "types" among superintendents. The most common type was the "problem solvers" followed by the "RD&D's" and then the "social interactionists" (although in that specific context we preferred to designate this last group as the "strategic manipulators") (Havelock, et al., 1973).

This chain of findings led us to believe that a similar set of items would be useful in drawing comparisons among our four federal D&U units and their respective user "networks." Hence, a third version of the checklist was developed for inclusion both in the federal interviews and in the two network surveys.

B. METHODOLOGY

In developing and administering this 20 item checklist we had four principal purposes in mind: (1) first, to find if the configuration of ideologies emerging from previous studies held true for federal D&U personnel; (2) second, to discover new patterns or additional patterns of attitude or ideology, if any; (3) third, to search for possible biases or blind spots in the perceptions and attitudes of both agency staffs and their respective network contacts; and (4) finally, to determine if ideologies conformed to program emphases as reflected in our analysis of D&U functions for the four agencies (Chapter 4).

It must be admitted that some difficulties emerged in administration of the form itself which have weakened our data base somewhat. First of all, officials at the highest levels among those sampled tended to reject the form; hence we do not have complete data corresponding to our interviews. Secondly, there was resistance in all four agencies to rating the actual performance of the D&U unit on any of the 20 items*; thus most of our analysis of this data is limited to respondents' judgments of the importance of the items in general. We did not have the same problem in the network surveys, however, and will thus be able to provide side-by-side comparisons of "importance" and "performance" for both the SRS and MA network surveys.

There is no one "right" way to select items for a questionnaire or to group items for analysis and summarization. Thus far we have discussed the concepts from which the 20 items were derived in terms of a theoretical model derived from literature review and supported by some previous investigations. However, it is also possible to cluster these items empirically, using predetermined objective criteria without regard to theory. The most commonly used statistical procedures to achieve clustering fall under the heading of "factor analysis."

Factor analysis has two principal purposes, both of which are germane to this survey project. The first and most common purpose is *data reduction*, i.e., the simplification of data presentation by reducing a large and complex set of item responses to a few key dimensions. A principal components factor analysis does this job by transforming a matrix of correlations among all items so as to produce new artificial variables which represent the most highly intercorrelated sets of items. Each of these artificial variables or "factors" has two statistical properties which are important in data reduction. First, each factor is "orthogonal" to every other factor; hence they are uncorrelated and should therefore have distinct and non-overlapping meaning; this conceptual purity of orthogonality is offset by the problem of interpretation; if a number of items of seemingly diverse content are represented in one common "factor," this factor will be very hard either to label or to comprehend as a unitary phenomenon. The other statistical property of principal component factors is the maximization of variance accounted for by successive factors: the first factor represents the linear combination of variables which represents the most variance; the second factor represents the linear combination of variables which represents the most variance after all the variance accounted for by the first factor is extracted from the correlation matrix; the third factor represents the next most variance and so forth. This fact is very important for data reduction since it means that an investigator can report as few or as many factors as he wishes with the assurance that the factors chosen represent the maximum explanatory power using that number of concepts.

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*In particular, many agency respondents who did not work in the D&U unit itself claimed they were not sufficiently familiar with their unit's work to be able to evaluate its performance on these dimensions.

On the other hand, a corresponding negative feature of the principle components solution is the tendency for too many items to pile up on the first factor. Because of the consequent difficulty of labelling and interpreting such large "G" (general) factors, most investigators rotate the factor matrix to find more easily interpretable dimensions, to spread the variance more evenly among factors, or to achieve what is often called "simple structure." For this analysis we have chosen the "varimax" method developed by Kaiser (1958). As summarized by Nunnally (1967), this method "maximizes the sum of variances of squared loadings in the columns of the factor matrix. In each column of the matrix, this tends to produce some high loadings and some loadings near zero, which is one aspect of simple structure...The varimax method has proved very successful as an analytic approach to obtaining orthogonal rotation of factors."

It is also possible to use factor analysis to test previously derived theories about the underlying structure of a set of items. Part of our intention in this project was to test the generalizations from our literature review against a freshly drawn set of data. Therefore, as we consider the results from the varimax factor matrix, we will be referring back, when possible, to the fit or similarity between these clusters and the theoretical clusters reported earlier in this chapter.

The questionnaire form on which the analysis is based is reproduced as Table 7.1. It can be see that ratings of "importance" were asked for in five categories from "essential," scored as "5," to "not important at all," scored as "1." Means and standard deviations were computed for each sample on the basis of the federal responses from the four agencies; a product-moment correlation matrix then was constructed, factor analyzed by the principal component method, and rotated by the varimax method to a four factor solution which in

[Insert Table 7.1 here]

our opinion represents the most economical and adequate "simple structure" clustering of the 20 items.

C. RESULTS OF THE FACTOR ANALYSIS

The results of the factor analysis are presented in Table 7.2. Factor "loadings" in this table represent correlations between each item and each of the "factors" derived. Hence, a factor is literally defined by those items which are correlated most highly with it and thus have the highest loadings. Items which have high loadings on one factor and low loadings on all other factors provide the most unambiguous definitions.

An examination of Table 7.2 reveals four rather clear factors. The largest and most complex seems to combine two notions, one concerning informal contacts between users and outside resource groups and the other

TABLE 7.1 Rating Form on D&U Strategy and Ideology Used in All Samples

F. Dissemination-Utilization Process and Procedures

The statements below are derived from research and literature on dissemination and utilization (D&U). We would like you to rate the importance of each of these statements for the improvement of the D&U process generally. Having rated the importance of each item, we then would like you to consider how well such processes are presently handled in the area of human or social need which is most relevant to your work.

	In your opinion, how important is each of the following for the improvement of the D&U process generally?					To what extent are these presently exemplified in the D&U activities in the area of human or social need which is most relevant to your work?				
	Essential	Very important	Moderately important	Not too important	Not important at all	To very high degree	To high degree	To moderate degree	To slight degree	Not at all
1. Collaboration and cooperation between researchers and users to find and adapt what is useful.										
2. Preceding utilization efforts by a full cycle of research, development, and evaluation.										
3. Systematic planning of utilization activities.										
4. Selecting a competent staff to implement change.								Asked only for user network surveys in SRS and MA.		
5. Starting out with adequate financial resources to do the job.										
6. Stressing self-help by those who are going to be the users of the research or change contemplated.										
7. Adequate diagnosis of the real user need.										
8. Involvement of informal leaders of opinion.			Asked of all samples.							
9. Informal personal contacts with those who need to accept the change.										
10. Reciprocal feedback by both users and researchers.										
11. Adequate contacts by user with resource groups outside his own organization and reference group.										
12. Communication between levels in user organizations.										
13. Making sure users are clear about the purpose of the research and the ways it might be used.										
14. Careful organization of the planning and implementation efforts.										
15. Encouraging resource groups to help users revise, adapt or draw appropriate implications from research findings.										
16. Generating a willingness of users to change their behavior or listen to new ideas.										
17. Generating a feeling by users that the research findings would have high benefit for them in their work.										
18. Minimizing frustration and difficulty encountered by users trying to adopt or adapt research findings.										
19. Coordination and teamwork within the user system.										
20. A concerted campaign to put the research implications across.										

emphasizing user involvement and concern for user needs. Of the two the informal contact dimension seems clearer on the criterion of simple structure (low loadings on other factors) but the two ideas are very definitely part of the same factor. Hence the factor combines the concepts of "problem-solving" and "social interaction."

TABLE 7.2

A Factor Analysis of D&U Strategy Items*
(Four Factor Solution-Varimax Rotation)

Item Clusters (Question Numbers from Table 7.1 in parenthesis)	Loadings on Each Factor			
	I	II	III	IV
Factor I: Building an Informal Network which is User-Centered**				
Generate user feeling of research benefit (17)	.67	.09	.23	-.21
Stress self help by users (6)	.60	.28	.17	-.05
Minimize user frustration (18)	.56	-.23	.26	.29
Encourage resource groups to help users (15)	.43	-.37	.26	-.26
Diagnosis of real user need (7)	.43	-.08	.37	.21
Informal opinion leaders (8)	.76	.10	-.15	.03
User contacts with outside resources (11)	.68	-.33	.07	-.02
Informal personal contact (9)	.58	.12	-.07	-.19
Factor II: Generating User Capacity				
Financial resources (5)	-.02	.78	.05	-.09
Generate user willingness (16)	-.12	.73	.07	.24
Competent staff (4)	.35	.73	.09	.10
Factor III: Emphasizing Systematic Res., Dev., and Dissem.				
Concerted campaign (20)	.14	.32	.73	-.05
Make users clear on purpose (13)	-.09	-.36	.63	.24
Full RD&E cycle (2)	.04	.41	.60	.07
Careful organization (14)	.22	-.26	.58	.08
Systematic planning (3)	.04	.16	.48	-.19
Factor IV: Linkage (2-way Communication)				
Res.-user collaboration (1)	-.12	-.05	.03	.83
Res.-user reciprocal feedback (10)	-.21	.08	.23	.75
Coordination within user (19)	.15	.37	-.26	.63
Communication between user levels (12)	.43	.13	-.39	.45

*Based on responses of 52 raters in four federal agencies.

**These labels are our interpretation of the conceptual dimension represented by the loadings of the items.

The second factor is clearly marked by three items with high loadings. The purest of these concerns financial resources but all three imply various aspects of user capacity, i.e., finances, motivation, and competence. This factor is not clearly identified with any of the three theoretical clusters hypothesized.

The third factor, composed of five high loading items, is very clearly associated with the predicted "RD&D" perspective, emphasizing planning, research, development, evaluation, and a planned dissemination thrust. However, some items in this cluster are also fairly strongly related to other factors as well. Notably, items #2 and #20 ("full cycle" and "campaign") imply extensive use of resources and hence a high system capacity. Items #13 and #14, on the other hand, focus on care and caution with the implication that both R&D and user system capacity should not be over-rated. Thus, there is an ambivalent relationship between the R&D Factor III and the Capacity Factor II.

Finally, a fourth factor is clearly marked by item #1 which was directly derived from the "linkage" perspective proposed by Havelock, et al. (1969). All items in this cluster incorporate the idea of two-way communication among the various human elements in the D&U macrosystem. However, item #12 which refers to intra-user system linkage is also quite strongly related to the user-centered information network approach of Factor I.

In summary, we find moderate confirmation of predicted clusters and more importantly a set of dimensions which hold together logically as well as statistically. For these reasons we have chosen these factors as the basis of our further presentation of data on inter-agency differences. However, we will make one modification; for the sake of conceptual clarity, Factor I items will be divided into two clusters, one representing the focus on the user (and hence most closely associated with the "Problem Solver" perspective), the other representing the focus on the communication network (and hence most closely associated with the "Social Interaction" perspective).

D. INTER-AGENCY DIFFERENCES

Understanding the meaning of 20 items for four agencies, two surveys and two types of questions is a formidable task for the researcher, let alone the reader. Thus, we have attempted to break down and summarize the data in several different ways to elucidate different points. Table 7.3, for example, shows agency comparisons in a rather crude form. It was constructed by taking the raw mean response of each set of respondents to each item and deriving a mean of means for each dimension identified in the factor analysis.

[Insert Table 7.3 here]

A few points are made quite clear by this table. First of all, on the average all dimensions are considered at least moderately important by representatives of all four agencies. Secondly, there are quite distinct preferences among the dimensions, "linkage" being most popular (highest with

TABLE 7.3 Mean Agency Responses* to Each Strategy Dimension

# of Items	Dimension	Federal Agency Respondents (in Phase I of the Project) NIMH (n=10)	OE (n=16)	SRS (n=12)	MA (n=14)
5	User-centering (Factor I-A)	3.28	3.90	3.64	3.48
3	Network building (Factor I-B)	3.17	3.77	3.20	3.40
3	Capacity (Factor II)	3.40	4.10	3.83	4.03
5	RD&D (Factor III)	3.34	3.98	3.98	3.70
4	Linkage (Factor IV)	3.60	3.93	3.95	4.08

*5 = "essential"; 1 = "not important at all"

MA and NIMH) followed closely by "capacity" (highest with OE, second highest with NIMH and MA) and "RD&D" (highest with SRS, next highest with OE). Agreement among agencies is even more striking at the bottom of the popularity scale. "Network building" was least popular with all, "user-centering" next least.

A third important revelation from Table 7.3 are the very striking inter-agency differences in over-all response. NIMH respondents tended to rate all items lower, and, in fact, had the bottom score for 17 out of the total set of 20 items.** We are not sure what this trend signifies; one interpretation may be that NIMH, being less involved in directed, mission oriented research, has less concern for planned strategies of D&U of any kind.

At the other extreme, OE places the highest emphasis on four of the five dimensions. This may reflect a greater investment in D&U over several years and a larger nucleus of persons for whom these concerns are central. It is noteworthy, however, that on the "linkage" dimension the Manpower respondents have the highest ratings. Indeed, this seems to reflect the great emphasis placed on linkage through such functional mechanisms as the "buddy system" and "interchange."

**For 9 of these 17 the difference was statistically significant by analysis of variance at a probability level of .10 or smaller despite the very small numbers involved.

Because the inter-agency differences in over-all response were large, we felt that detailed comparison of absolute ratings would be somewhat confusing. Therefore, a rank score was derived for each item which represents its relative ranking out of 20 for that agency alone. In Table 7.4 through 7.8, the detailed item-by-item analysis will be presented in this intra-agency ranked form.

TABLE 7.4 User Centering Dimension

Item	(Relative Ranking Out of 20 Items within Each Set of Respondents) NIMH	OE	SRS	MA
Generate user feeling of research benefit	10.5	14	12.5	11.5
Stress self help by users	18.5	20	20	20
Minimize user frustration	16.5	7	16	15
Encourage researchers to help users	9	14	8.5	15
Diagnosis of real user need	3	1	1.5	5
Mean Ranks	11.5	11.2	10.5	13.3

Table 7.4 indicates that while this dimension may rank low over-all in the estimation of our respondents, at least one item within it ranks high; "adequate diagnosis of the real user need" is highest rated by OE respondents and tied for highest at SRS. What remains ambiguous in the item is "who does the diagnosis?" For some this will be an act in which the user is intimately involved, for others it may be a question for experts and for careful research investigation. Both ideas draw a response to this item as indicated by the loadings on Table 7.2.

"Stressing self help" was the least popular strategy for three of the four agencies. Evidently this item suggests too passive a stance for the D&U system although it roughly echoes a major point in the second Nixon inaugural and has been generally emphasized as a matter of administration policy.

Lastly, when we examine the mean ranks, we find little difference among the four agencies with the MA ratings being perhaps somewhat lower.

[Insert Table 7.5 here]

In Table 7.5 what is most noteworthy is the very low rating of "involvement of opinion leaders" as an element of strategy. Such views seem to indicate either ignorance or rejection of a very large bulk of findings on

TABLE 7.5 Network Building Dimension

Item	NIMH	OE	SRS	MA
	(Relative Ranking Out of 20 Items within Each Set of Respondents)			
Informal opinion leaders	18.5	17.5	19	19
User contacts with outside resources	14.5	10	18	15
Informal personal contact	4.5	14	17	10
Mean Ranks	12.5	13.8	18	14.7

the diffusion of innovations which point to the absolutely crucial role of the opinion leader. What may account for this rating, however, is the puzzlement of many D&U managers on how to use such findings in a practical way. This attitude and the reasons behind it deserve further investigation; it would be ironic, indeed, if those responsible for D&U turned their backs on the most solid empirical research on their own subject.

Mean rankings on the "Network Building" dimension are low for all four agencies but extremely low for SRS and quite low for MA, the two agencies where we would judge the informal professional networks to be weakest and most diffuse. For NIMH, on the other hand, where the informal professional networks are very strong and buttressed by strong professional associations, the relative rankings are highest for this dimension. Primarily this is caused by the high NIMH rating of "informal personal contacts"; in this respect it was noted that NIMH staff in the branch under study did far more field visiting than their counterparts in the other three agencies.

TABLE 7.6 Capacity Dimension

Item	NIMH	OE	SRS	MA
	(Relative Ranking Out of 20 Items within Each Set of Respondents)			
Financial resources	16.5	14	12.5	8
Generate user willingness	7	5	6.5	8
Competent staff	7	3.5	10.5	5
Mean Ranks	10.2	7.5	9.8	7

From Table 7.6 we can see that financial resources are not the most important aspect of "capacity" as far as most respondents are concerned. Particularly for NIMH and OE (with the most affluent R&D programs), motivation and competence are much more important. For MA, all the capacity items are quite important.

TABLE 7.7 RD&D Focus Dimension

Item	(Relative Ranking Out of 20 Items within Each Set of Respondents) NIMH	OE	SRS	MA
Concerted campaign	14.5	19	10.5	11.5
Make users clear on purpose	2	14	5	15
Full RD&E cycle	20	10	14	18
Careful organization	7	3.5	3.5	5
Systematic planning	10.5	2	3.5	3
Mean Ranks	10.8	9.7	7.3	10.5

Three of the four agencies differ little on the RD&D Focus dimension (Table 7.7). SRS rates highest, no doubt reflecting the extreme emphasis on tightening management practices and increasing R&D accountability which was very evident at the time of our interviews. On certain items, however, interagency differences are marked. The "full cycle" notion is least popular in NIMH and in MA, and, indeed such a full cycle is difficult to discern in many of their program thrusts. NIMH is also relatively low on "systematic planning" again reflecting the small amount of administrative pressure in this direction. On the other hand, great importance is placed on clarifying research purpose and possible uses in NIMH and SRS. Possibly this may reflect the greater risk of certain kinds of misuses in medically related disciplines.

[Insert Table 7.8 here]

Table 7.8 delineates the separate agency responses on the Linkage dimension, and here it is also clear that some items are far more popular than others. The strongest item for NIMH, MA, and SRS (tied) is "collaboration and cooperation between researchers and users..". It should be remembered from Table 7.2 that this is also the highest loaded and "purest" of the four items in this cluster. Absolute ratings on this item are between "very

TABLE 7.8 Linkage Dimension

Item	(Relative Ranking Out of 20 Items within Each Set of Respondents)			
	NIMH	OE	SRS	MA
Researcher-user collaboration	1	7	1.5	1
Researcher-user reciprocal feedback	4.5	7	8.5	2
Coordination within user	12	17.5	6.5	15
Communication between user levels	13	10	15	8
Mean Ranks	7.6	10.4	7.9	6.5

important" and "essential" for all agency samples including OE. However, its lower _relative_ ranking in OE may be related to the vastness of that D&U system and hence the greater difficulty of providing one-to-one services.

It is also generally true that linkages between researchers and users (the first two items) are rated as more important than linkages within the user system. This, of course, is a federal viewpoint.

TABLE 7.9 Mean of Mean Ranks for Five Dimensions

	NIMH	OE	SRS	MA
User Centering	11.5	11.2	10.5	13.3
Network Building	12.5	13.8	18	14.7
Capacity	10.2	7.5	9.8	7
RD&D	10.8	9.7	7.3	10.5
Linkage	7.6	10.4	7.9	6.5

Relative mean ranks are again summarized in Table 7.9. In the main, officials in different agencies seem to view D&U in very similar ways. Linkage is most important, perhaps, for the Manpower D&U unit and this is certainly reflected in our interviews and in the philosophy expressed by its D&U chief, but it is also very important in relative and absolute terms for NIMH and SRS. Network building, on the other hand, which many might logically be considered related to linkage building, is very low rated by all four agencies on a relative scale.

E. FEDERAL STAFF AND USER NETWORK IDEOLOGIES COMPARED

Figure 7.5 compares responses on "importance" of the 20 strategy statements from each of the user networks with responses from Federal agency employees. We combined all data from Phase I interviews with responses from Federal employees in the network pilot studies* to give us a "Federal" group for each agency. To assess different perspectives between the agency and the "outside," we then created a group composed of all the non-Federal employees from the pilot studies. The 20 item means for the groups are found in Figure 7.5.

[Insert Table 7.5 here]

The first thing we note in scanning the means is the high overall agreement in the profiles of the means for Federal and non-Federal respondents in each of these social problem areas. Ranking the 20 means, we find Spearman rank order correlations of .91 for the two Manpower groups, and .87 for the SRS groups (significant well beyond the .01 level). If we compare all Manpower to all SRS means, the correlation is .88. So, there appears to be an *extraordinary universality and stability of opinions concerning D&U within each system, and across systems*. We would also therefore expect to find a very similar underlying structure of ideologies in the different samples.

An important difference, difficult to perceive in the figure, is the overall difference between the two agencies. On 18 of the 20 items SRS has a slightly higher score than Manpower (significant by sign test, $p < .001$). Manpower as a whole scored higher only on "Communication between levels in user organization," and "Selecting a competent staff to implement change." Hence, it can fairly be said that the SRS system perceives effort on all these dimensions of D&U as being somewhat more important than their Manpower counterparts. The differences do become more specific when we compare Federal and non-Federal groups across the agencies. If we compare the Manpower and SRS Federal groups, we find no difference in the mean levels (MA is higher than SRS on eight; MA is lower on 12). When we compare the two non-Federal networks, however, the differences are striking: SRS respondents are higher on every one of the 20 items. The two agencies also differ internally: in Manpower, the Federal employees are higher than their network on 15 of the items; but in SRS, the network is higher than the Federal employees on 16 items. In summary, then, the differences between the two agencies come not from the Federal employees, but from the fact that the SRS network rates all of the items much higher than does the Manpower network.

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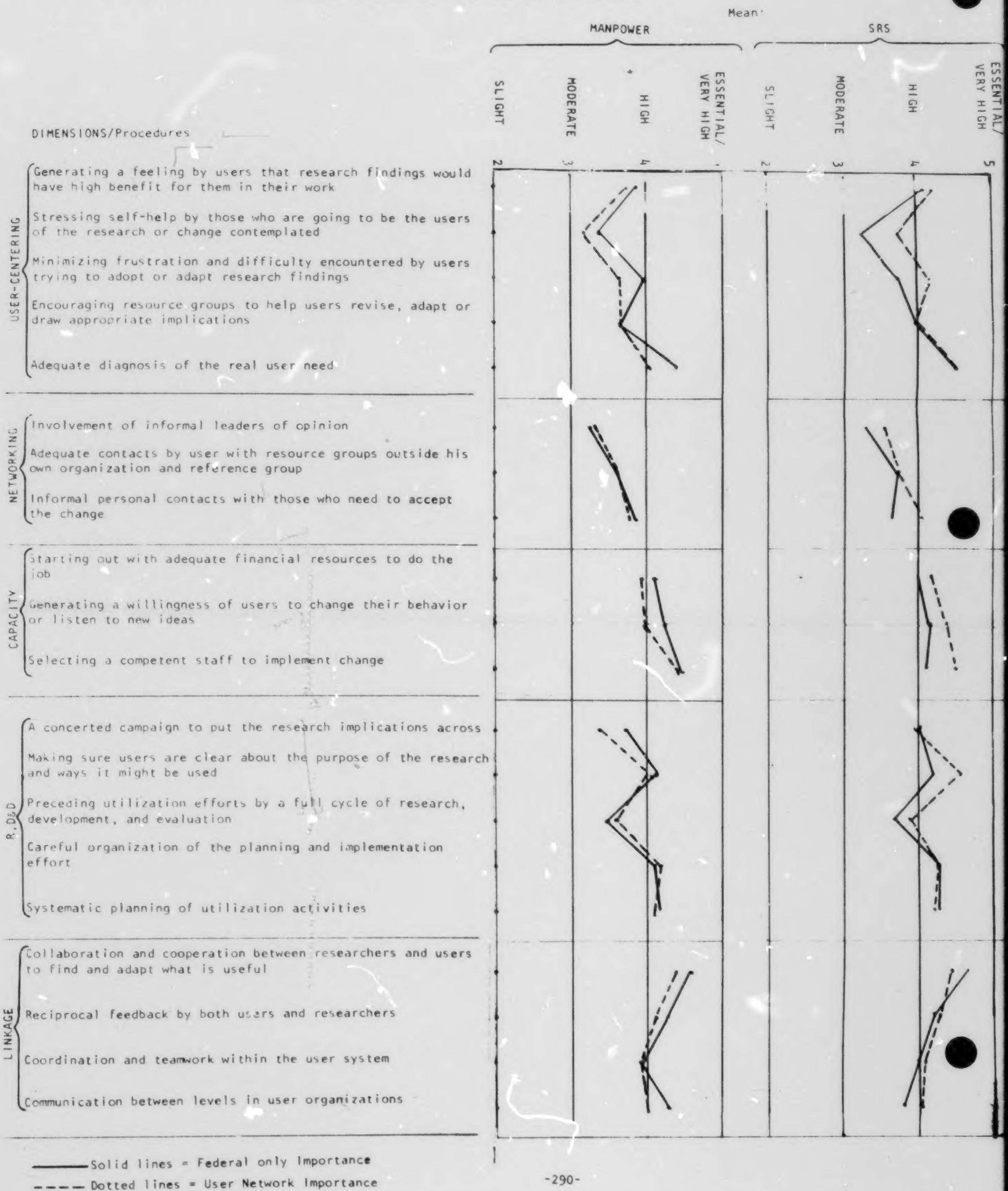
*The methodology of these surveys was presented in Chapter Five.

FIGURE 7.5 Federal and User Network D&U Ideology Compared



The largest discrepancies in perception of important strategies occur in different places in the two systems, however, though both occur in the area we have called "user centering." For SRS there is a significant difference (by t test) between the Federal and non-Federal groups on "Stressing self-help by those who are going to be the users...," with the network saying this is of higher importance. In Manpower, the difference between the two groups is on "Adequate diagnosis of the real user need," with the network lower. Thus, the SRS Federal staff may be under-concerned with development of own self-help capabilities among their users, and the Manpower network under-concerned with the importance of user need diagnosis.

F. IMPORTANCE AND EXISTING REALITIES COMPARED (SRS and MA User Networks)

Figure 7.6 displays comparative data for each network survey on ratings of "importance" of each of the 20 strategy items and ratings of "To what extent are these presently exemplified in the D&U activities in the area of human or social need which is most relevant to your work?" (See again Table 7.1 for the layout of the question in the survey instrument.)

[Insert Figure 7.6 here]

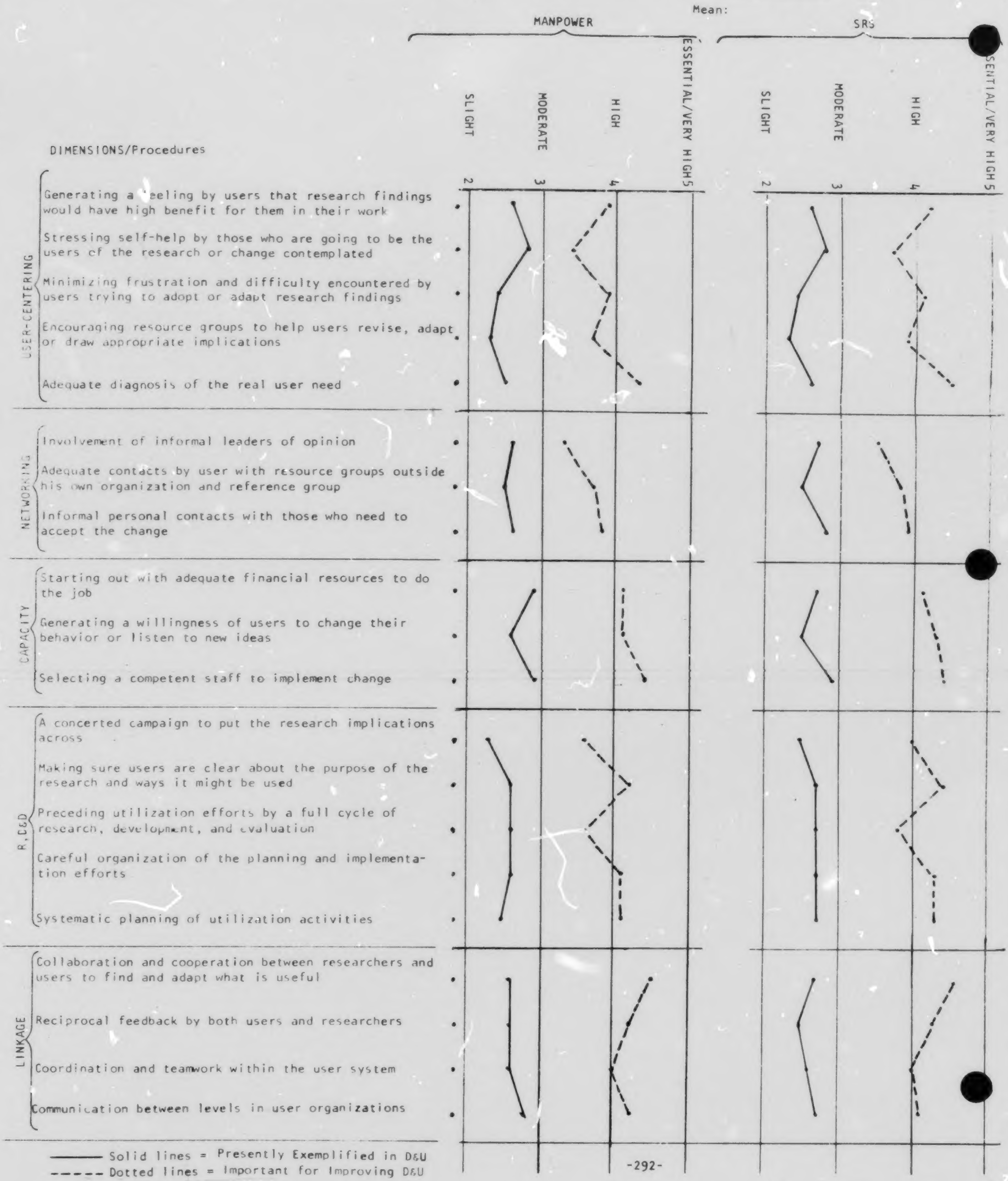
Very clearly there are large discrepancies between "importance" ratings and "presently exemplified" ratings for all items in both networks, indicating a tremendous performance gap for all aspects of D&U. Less evident in the figure is the fact that once again the rank order of items on "presently exemplified" between the two agency networks is fairly highly correlated (Spearman r = .75, $p < .01$), this despite the fact that the range of responses is quite narrow for both samples. The ratings for the two networks on "presently exemplified" are very similar both in pattern and absolute values, although because of the higher over-all "importance" ratings in SRS, discrepancy scores are also significally higher for the SRS network than for the MA network (sign test $p < .01$).

Because the pattern of discrepancies on some dimensions seemed to have almost a mirror image, we also computed rank order correlations for "importance" vs. "presently exemplified" for each network. The results showed minimal relationships (SRS r = -.13, MA r = +.18).

On individual items, the largest discrepancies for both samples were on "Adequate diagnosis of the real user need" (last item on User-Centering dimension) and "collaboration and cooperation between researchers and users to find and adapt what is useful" (first item on Linkage dimension). However, there were several close runners-up (e.g., "reciprocal feedback," Linkage #2; "making sure users are clear on research purpose," RD&D #2; "generating willingness," Capacity #2; "systematic planning," RD&D #5; and "minimizing user frustration," User-Centering #3). Generally the largest discrepancies stretched across four of the five dimensions.

Smallest discrepancies were on the two items also rated lowest in importance: "stressing user self-help" and "involvement of informal leaders of opinion." The highest "presently exemplified" rating in both networks went to "competent staff." In the Manpower network financial capacity was equally highly rated. Nevertheless there remains a wide gap on both these capacity items between existing reality and importance.

FIGURE 7.6 Ideal and Actual D&U Performance Compared (SRS and MA User Network Surveys)



CONCLUSIONS FROM STRATEGY-IDEOLOGY ANALYSIS

In the preceding sections of this chapter, we have offered many detailed tables and analyses based on responses to 20 items. Are there some general conclusions which can be derived from what we have presented?

First of all, we think we have confirmed the existence of some distinct ideologies or strategic preferences among those concerned with D&U. In general, however, no one ideology is dominant in any one of our agencies or among either of the user networks sampled. In fact the pattern of preferences among strategic alternatives is remarkably constant across groups. On the other hand, there are some significant differences between samples which cut across all items. Notably, the NIMH group rated nearly all items as less "important" than did their counterparts in the other three agencies. We also found that the user networks rated most items as more important than did their federal counterparts, and finally that the SRS network rated most items more important than did the Manpower network. In all cases, however, the relative emphasis on different items was very similar.

Much of our analysis can be summarized most simply by findings on just three items from the 20 because these three items are most representative of the range of concerns and the ideological differences expressed. They are as follows:

1. "Collaboration and cooperation between researchers and users to find and adapt what is useful." This item has the highest "importance" ranking in 3 of 4 agencies and in both user networks. It is also the highest loading item on the "Linkage" dimension (Table 7.2) and shows the highest and next-to-highest ideal-actual discrepancies among the SRS and Manpower user networks respectively.

2. "Adequate diagnosis of the real user need" was rated very close behind "collaboration" for most samples and highest for USOE. It is a factorially complex item, having its highest loading on the "User-Centering" dimension, but also loading rather highly on the "RD&D" dimension. In terms of ideal-actual discrepancies, it showed the largest gap for both networks.

3. "Careful organization of the planning and implementation efforts" is probably the best item to select as a representative of the "RD&D" dimension. It is third ranked in importance by federal staff's in OE and SRS, fifth in MA, and seventh in NIMH. It also shows very high ideal-actual discrepancies in both user network surveys.

As a set these items well represent the D&U-related concerns and aspirations of all the groups sampled; they also appear to represent broad segments of the ideal model of D&U offered in Chapter 3 and used as an analytic framework in Chapter 4. Hence, we feel they offer a basic guideline or set of principles for any D&U unit.

On the other hand, the set does not cover two of the dimensions which emerged from our analysis, namely "Capacity" and "Network Building." First, on capacity, we have not found any dramatic evidence of either overwhelming importance or crying need, although ideal-actual discrepancies are evident. Furthermore, "capacity," while being a clear and independent dimension of moderate importance, is something that D&U strategists can usually do very little about.

On "Network Building" we remain somewhat puzzled and frankly in disagreement with our respondents, particularly on the item "involvement of informal leaders of opinion." Empirical research on change shows no strategic element more important than this one, yet it is consistently one of the least popular of our 20 strategy items, among each of the groups in our various surveys.

II. H-E-L-P S-C-O-R-E-S: A TEN PART RATING SCHEMA FOR DIAGNOSING D&U PROBLEMS

A. BACKGROUND AND RATIONALE

As a way of summarizing most of the empirical findings from the research literature on D&U, Havelock, et al. (1969) proposed seven "factors" which seemed to run as consistent themes throughout hundreds of studies. The most important of these was identified as "linkage" by which we meant primarily the existence of person-to-person contacts where two-way communication was taking place. It is evident from the foregoing section of this chapter that this aspect of D&U process is also deemed of greatest importance to a wide spectrum of D&U specialists, administrators, and users. The second factor, which we labelled "structuring," referred primarily to the orderliness with which D&U activities were conceived and executed. It is most closely related to the "RD&D" dimension discussed earlier.

A third factor, labelled "openness," was used to describe a motivational state either in researchers or users which predisposed them to *both* giving *and* receiving new information, giving and receiving information on new channels, or trying out new behaviors.

A fourth factor, identified as "capacity," is closely related to the "Capacity" dimension emerging from our 20 item analysis. It included most of the things we usually think of as separating the "have's" and the "have-not's": money, resources, skill, intelligence, education.

Distinct from, and in some cases more manipulable than "capacity" is the "reward" factor. The concept of "reward" or "reinforcement" is fundamental in most theory and research on the psychology of learning; it seemed obvious that amount, type, and frequency of rewards were vitally important to build and maintain habits of research dissemination and utilization. It was particularly clear that rewards for researchers in getting their research utilized by non-researchers were practically nonexistent. Likewise, the reward-value of most research reports for most practitioners was usually not-at-all clear.

A sixth factor, "proximity," was included to account for the many findings (from the "social-interaction" researchers) which pointed to relative position in social networks as a key factor in successful influence and diffusion. Physical proximity is also known to be very predictive of the use of information systems and services. It is a usually necessary prerequisite to observability (demonstrations) and to interpersonal communication (linkage).

Finally, we invoked the concept of "synergy" to account for certain important effects which seem to occur only when there is a convergence of efforts and/or stimuli on potential users. A single message at one time and one place on one channel seldom has much impact by itself unless it is very simple and very similar to past messages received. Research utilization, on the other hand, usually involves a fairly complex message and sometimes a message which contradicts or runs in an entirely different direction from the past thinking of the would-be user. If this is the case, then transfer will not succeed unless and until the message is repeated in different forms, perhaps on different media, and most certainly until it is "confirmed" from more than one source. Planned formal D&U systems sometimes take inadequate account of this fact, whereas very active informal networks by their very nature incorporate it.

Subsequent to the publication of this seven factor analysis, Rogers and Shoemaker (1971) came forth with a revised edition of Rogers' earlier work on the Diffusion of Innovations. Their new edition included three concepts which we thought were inadequately covered in our list. The first of these was "homophily," defined by them as "the degree to which pairs of individuals who interact are similar in certain attributes." Most studies of diffusion indicate that successful transfer most often occurs between homophilous pairs.

Another concept which was not adequately covered in our earlier analysis is "empathy," i.e., the degree to which users and resource persons can accurately understand and appreciate each other's situation. "Empathy" may be a result of either linkage or homophily or both, but it is a distinct dimension and may occur independently of either. Rogers and Shoemaker cite a number of studies which indicate that earlier adopters have more empathetic ability, and they hypothesize that successful change agents will also have more empathy with their clients. This concept is closely associated with the "user-centering" dimension discussed earlier.

Finally, we found in Rogers and Shoemaker that change agent success in gaining adoption of innovations is closely associated with the amount of effort expended by the agent. They cite 16 empirical studies which support this hypothesis and only 3 which do not support it. We expect that this dimension is a general one, applying not only to change agents but to researchers, practitioners, and other users as well. The word "energy" is used by us to define this concept.

As a package of concepts to remember, these ten principles of effective utilization are a difficult set to keep in mind. It was for this reason only that we reordered them into the acronym "HELP SCORES." Fortunately we were able to sort them into two words which had some sense and relevance in themselves. Indeed, as a guide for the D&U specialist in judging his own program or in planning, supporting, and evaluating specific D&U activities, we believe this list represents a rather comprehensive checklist.

To make a preliminary test of the adequacy of this list, we decided to code the responses to our in-depth interviews with personnel of the Manpower Administration. The results of our analysis appear below.

B. PROCESS AND PROBLEMS IN THE MANPOWER D&U SYSTEM REVEALED BY A H-E-L-P S-C-O-R-E-S ANALYSIS

Following is an analysis of the interviews conducted with the Division of R&D Utilization in the Manpower Administration, Department of Labor. There were 16 interviews conducted, six with staff members of the

R&D unit and ten with other persons identified by the unit as most relevant to their work; in our analysis the D&U staff will often be designated as "insiders" and the others as "outsiders." All interviews were taped and subsequently transformed into detailed summaries. The two principal investigators then independently coded all contents using the guidelines shown in Table 7.10.

[Insert Table 7.10 here]

Homophily

Diffusion research studies consistently show that when senders and receivers are similar to one another in various relevant characteristics, communication is easier. The degree of similarity between sender and receiver has been called "homophily." A D&U unit which stressed homophily in its strategy would do all that it could to use communicators of R&D who were similar to intended audiences in language, age, sex, profession, etc. It would also try to shape the message so that it would be in the user's language and presented in a manner that the user might have employed himself. Homophily also applies to less tangible characteristics such as values, belief systems, and culture. Generally speaking, research and practitioner communities are likely to differ widely on these dimensions, so that the D&U strategist may have a real task in finding crucial elements that they have in common.

Although homophily is an implicitly important aspect of many of the Division's activities, it received very little explicit mention in interviews. Four comments from three insiders were coded in this category compared to three comments from three outsiders.

One insider described the typical researchers as "too academic" in language style so that abstracts had to be written by Division staff (who presumably have a better feel for the style that a typical user would accept). Another insider agreed on the importance of form but added that the form and substance had to be consistent with the user's view of the world (belief system homophily). A third insider respondent indicated that the problem may be more functional in that users are not really that concerned with research.

One outsider echoed this view while placing more emphasis on the researcher's orientation. University people, he said, were usually inclined only toward topics in which they had personal interest. Therefore, it is often hard to find a researcher interested in a problem of concern to the department. Another respondent saw a difference between his division in USES and ORD on what constitutes "good" research, implying that ORD, itself, was too academic in its orientation. But a more serious value discrepancy was cited by another respondent as crucial: he said that the R&D work done by ORD contractors is "in opposition to concepts accepted by the American people." Hence, some policy people in high positions view them as "wild people."

TABLE 7.10 Guidelines for Interview Coding on H-E-L-P S-C-O-R-E-S

Homophily	+ Similarity of characteristics of sender and receiver: e.g., with respect to values, age, education, language, resources; congruence or *alikeness*.
	- Dissimilarities of sender and receiver, especially large differences or discrepancies in any of the above.
EMpathy	+ Understanding or feeling for the other and the other's situation. Might be inferred from efforts to simulate or understand the role of the other, e.g., the client by the researcher, the researcher by the client, the client and the researcher's situation by the federal agency, etc. (Does not imply any direct communication with the other.)
	- Failure to understand or feel for the other.
Linkage	+ Contact or relationship between persons or groups is sought or achieved.
	- Contact between persons or groups is notably absent, fails to be achieved, or is broken.
Proximity	+ Placement of persons or groups near each other, juxtaposition, arranging so that people will be in the same place at the same time, but without necessarily establishing communication between them (which would be better scored as linkage); spatial or geographical arrangements which place users, resourcers, and federal personnel close to each other. Travelling and general visiting might be scored as "proximity"-creating behavior rather than "linking."
	- Separations or long distances between people and groups, whether deliberately created or happenstance. Walls and barriers of various sorts might be considered means of reducing proximity as would separation into different organizational families. NIMH has minus proximity with respect to OE, SRS, and MA on both organizational and geographic grounds.
STructuring	+ Any evidence or planning, ordering, systematic arranging, scheduling, mapping in a framework, quantitative analysis or evaluation of objectives, work or output, e.g., systems analysis, PPBS, etc. (Obviously such structuring may be misguided, excessive or overdone, hence this dimension, like some others, has value only within certain limits.)
	- Evidence or confusion, disarray, ad hocracy, muddling through, lack of organization, irrationality.
Capacity	+ Any sign of affluence, talent, experience, wisdom, intelligence, strength, or size when such is suggested to be a "given" in the situation or a "cause" rather than an outcome of other factors, e.g., "so and so was a good writer" (talent). "They had a large grant" (affluence). "It was a top university." "He really knows the bureaucracy, inside and out" (experience, shading on "empathy" factor).
	- Poverty, inadequacy, outstanding lack of talent, resources, experience, etc., especially when cited as a "given" or a reason for something else not happening or not coming out right.
Openness	+ Any sign of willingness or eagerness to listen, to receive, to give, to tell, or to share ideas, knowledge, or resources with others. Willingness or eagerness to change. Programs to change attitudes usually are intended to increase openness. Willingness to try out new behaviors probably represents a higher level of openness than a mere willingness to listen. Openness is not the same as being linked although either might lead to the other. You might have a formal link to someone in a very circumscribed relationship in which the receiver might not be open to many diverse sorts of messages. On the other hand, people can be open to receiving new information or new contacts and still not get them. Flexibility of any sort would also rate as "openness," as would a willingness to take risks.
	- Any sign of rigidity, dogmatism, unwillingness to listen or to tell, secrecy, erecting or maintaining barriers to communication, shunning opportunities to communicate or to go after new information and new sources.
Reward	+ Provision of financial support, security, esteem, status, or benefits of any kind which can be seen as reinforcements. Might include providing companionship, publication, compliments, encouragement, increase in pay or power, relief from stress or work.
	- Lack of or loss of any of the above, punishment, negative sanction, disapproval.
ENergy	+ Heavy investment of time and effort, persistence, aggressiveness, caring a lot, concern for action and movement, achievement motivation, high aspirations.
	- Inertia, indifference, maintenance orientation.
SYnergy	+ Coming together of forces, orchestration, combining of diverse elements, synchronization of multiple diverse media and messages to produce joint or additive effects, whether by plan or serendipity.
	- Lack of joining of elements, diffuseness of diverse efforts, failure to synchronize, disharmony.

The clearest examples in which the Division actually utilizes the homophily principle are those projects described as "utilization by subversion," i.e., where professional groups are given special contracts to diffuse R&D findings to their own members.

Empathy

Homophily is usually a "given" in a situation: we are either similar to another person or we are not. If we are fundamentally different in background, race, sex, age, role, job, status, etc., it is more or less impossible to achieve homophily on these attributes. In such an event, the next best thing is "empathy," by which we mean the ability to put oneself in the other person's shoes vicariously. In this context, empathy is defined broadly to include any type of understanding of the other party's situation. This understanding might be on an intellectual level or on an emotional level or both. Empathy, by itself, does not facilitate utilization of knowledge directly, but it does put the resource person in a position to know how to coordinate users, to know what they need, how they will respond to new inputs, and how they will be most likely to react in a resourcer-user relationship. Empathy is also dynamically related to homophily. For example, homophilous individuals will be able to empathize with one another much more readily than heterophilous individuals, and conversely, those who empathize with one another will be likely to develop similar attitudes and awareness, hence becoming more homophilous.

A D&U unit which stressed "empathy" might want to utilize role-playing, simulation, and job-rotation in its strategies.

The Manpower Administration's Division of R&D Utilization does exhibit some concern for the empathy factor through its over-all efforts to involve researchers in practitioner problems, but the interviews provided only a handful of comments that could be related directly to empathy. Four comments from two insiders seemed to fit this category while six comments from four outsiders were relevant.

The two insiders expressed concern that the Division does not know enough about what policy makers (in the Department of Labor) want. One outsider showed this concern, suggesting that "we make policy makers sensitive to R&D findings before we make them policy makers." This same respondent noted that he looks at new federal legislation before it is implemented so that he can estimate in advance the kinds of research needs that the administrators of the new program will have. One insider also suggested that researchers needed a little more empathy with policy makers; the presentations to department staff and policy makers were often so bad or so academic that they turned the audience off.

One outsider also mentioned empathy with users as a key problem for the Division. He felt that USES, as the line agency, was more grassroots oriented than ORD and had a better idea of the problems of the local offices. One insider also commented that "we don't know enough about what users are using, need, and want."

In general, the Division does not seem to have focused on empathy-building strategies directly through such devices as role playing, simulation, job and role rotation, or living-in experiences of one sort or another. This may therefore be an area for future program consideration.

Linkage

Before any knowledge can pass from one person or group to another, there must be some sort of connection between them which allows communication to take place. Studies of knowledge dissemination show that D&U effectiveness is related to the number, variety, and strength of these connections. In this analysis, we have grouped the various statements related to connectedness between persons and groups under the heading "linkage."

In coding the interviews in the Manpower Administration, we found a large number of linkage statements: 63 from division insiders, 62 from outsiders. We have tried to classify each statement according to the persons involved (as senders and receivers) and according to the respondent's perception of the quality or significance of the link. The results for 103 responses which could be meaningfully coded in this manner are shown in Table 7.11.

[Insert Table 7.11 here]

A majority of statements (68) indicated either that linkage between 2 persons or groups was good or that a specific event occurred in which person or group X communicated with person or group Y. Twenty-three instances were cited where linkage was unsatisfactory or lacking; in 13 cases (representing 3 inside and 5 outside respondents), the importance of a specific type of linkage was noted.

Comments are clearly bunched in the areas most closely attached to the respondent's work situation, i.e., among the utilization division and ORD staff and from them to others. The highest frequency of linkage is between ORD (including the Division) and planning and policy people, and in this area, the preponderance of examples are positive, particularly as cited by Division insiders (8/2). Although linkage to the line agencies such as USES ranked second in frequency (19 instances), the inside-outside ratio suggests a far less satisfactory state of affairs (8/9).

Linkage within ORD has been deliberately fostered by the "buddy system" policy of several years standing and is reflected in a ratio of 15 positive to zero negative linkage instances. We also note a positive ratio of linkage with researchers (12/1), again perhaps reflecting the "buddy" policy. One insider noted that researchers were not a priority group for the dissemination of ORD products; in fact, however, researchers and academicians of various sorts dominate the Division mailing lists and represent the majority of unsolicited inquiries for information.

The smaller frequencies and the many blanks in this table are also noteworthy. Communication links to non-researchers outside the federal government are hardly mentioned at all by those outside the Division although some Division staff (4 mentions) indicate the importance of this type of linkage. Linkage to the general public is almost never mentioned. The focus of our questions may have contributed to this result, however.

The table generally reflects the situations of ORD; there is good linkage within and with a small group of researchers, but a high degree of frustration in trying to link with policy makers and especially practitioners. The paths to the mass of practitioner-users are blocked by the bureaucratic rules and structures of the federal system.

TABLE 7.11 Linkage as a Factor in Utilization in the Manpower Administration (Codable Responses from 15 interviews including 6 in the Division of R&D Utilization)

	Linkage cited as important in this area		Example of linkage cited or linkage reported as "good" or improving		Example of poor, inadequate or declining linkage		Total Codable Comments by Type of Link	Positive to Negative Ratio
	Insiders*	Outsiders*	Insiders	Outsiders	Insiders	Outsiders		
Researchers to:								
Div. & ORD		1	7	5		1	15	12/1
Federal Planning and Policy		1					1	
Fed. Line Agency				1	2		3	1/2
Other Practitioners & Users in General	3		1	1			5	2/0
Div. and ORD to:								
Federal Planning and Policy	2		8	5	2	4	21	13/6
Federal Line Agency	1	1	4	4	3	6	19	8/9
Other Practitioners & Users in General	1	1	6	2	3	1	14	8/4
Among:								
Research			1	1			2	2/0
Div. of Utilization			2				2	2/0
Div. of ORD			9	6			15	15/0
Federal Policy		1		5			6	5/0
Inter-Agency				3			3	
Agency General		1				1	2	
TOTALS	7	6	38	33	10	13		
COMBINED	13		71		23		108	

*"Insiders": Staff members of the Division of R&D Utilization.
"Outsiders": Manpower Administration Personnel in other Divisions.

Proximity

Proximity, the mere fact of being close to someone physically, geographically, or organizationally, is one of the most reliable predictors of effective D&U. In the Manpower Administration interviews, 18 instances were clearly codable into this category, 9 from 6 insiders, 4 from 7 outsiders.

Conferences (which create a temporary proximity between various groups) are a favorite tool of the Division. For example, there is an annual "New Manpower Researchers" conference which introduces new Ph.D.'s in the manpower field to policy makers. The Brookings Institution had a special contract last year to introduce research findings from the WIN program to policy makers. A conference was the major vehicle for this, but according to one informant, it was not well attended by policy people. Other special conferences have been held at various times as a major vehicle for reporting successful findings and displaying successful demonstration projects. The Division also makes some outreach to annual conventions in relevant professional fields and organizes display booths for various ORD products.

Some inside staff stressed the importance of personal visiting and direct contact on field sites for themselves and potential users. One said that the most effective way to get utilization is "to see it." Another said "we don't go out enough to the potential user - you can't just send the report." The active role sometimes taken by Division personnel to create proximity and promote linkage is reflected in comments such as: "They took down JOBS people and others to show them how the center was operating."

Proximity may play an important role in relations within the Manpower Administration since some units are physically housed together, some are blocks away, and some are miles away. One ORD research unit head said he had a close relationship with the Division of Utilization "since they are in the same office." A difficult relationship with USES, the agency with line responsibility for direct access to the field, is probably made worse by both organizational and physical separation. The agencies are housed in different buildings. Communication with the top policy figures in the Department of Labor is probably inhibited by the same geographic factor.

Structuring

In previous studies of D&U, the degree of systematic organization, planning, and coordination of elements seemed to be strongly related to utilization success. This dimension of orderliness of function and process was given the label "structuring." We were able to identify 94 statements in the 15 interviews which seemed to have reference to a quality of structuredness (or lack of it). Most of these comments came from those outside the division, 65 vs. 29. Most of these were merely statements by respondents concerning how work was organized in the areas they were responsible for. For example, the head of ORD described the development of an annual "R&D Funding Plan" as an activity requiring generating research ideas within a framework, rating these on specified criteria, planning specifically for one year and more generally for two, and taking cognizance of future events which may change demands on the staff, e.g., the passage of the Emergency Manpower Employment Act. Several items in this process suggest a quality of orderliness and structure. The ORD director also noted some ways in which they operated in a less structured manner; for example, he noted that the

D&U strategy is mostly ad hoc, not based on any theory. He also noted that there was no set system for either defining who clients were (depends entirely on the product) or how to reach them. There is also no set procedure for finding out whether intended users actually are reached and actually use what they get. However, such comments were made as statements of fact with little implication that the situation was other than it should be. Getting such data on utilization would be like "measuring the unmeasurable."

The expression "ad hoc" is used over and over again by different staff members in ORD, particularly when applied to utilization strategies. To some, this "ad hocracy" is merely inevitable but to others, it is something to be deplored. One ORD staff member stated it this way: "it is a matter of bouncing from one crisis to the next....you get away with a lot in an ad hoc system.... things don't get done." One respondent outside ORD who was generally critical of their way of doing things said that part of the "failure" of ORD to implement research is due to their lack of data on the use of research and the fact that, in his view, they did not build evaluation designs into projects.

Staff within the Division generally agreed that many functions were carried out without a high specification or structuring. The Division director noted that in determining needs they didn't do a good job of seeing "whether all bases are covered."

Capacity

It has generally been observed in all areas of human endeavor that those persons with the most resources to start with will be the most successful in whatever they do. Wealth, power, education, and talent can all be acquired attributes to some extent, but if they are given they will provide an enormous advantage. This truism applies equally to dissemination and utilization activity. Hence, the larger the D&U unit, the larger its budget, the higher it stands in the hierarchy of the Department, the more educated and talented its staff, the more successful we would expect it to be.

What do the interviews tell us on these points? First of all, it does not appear that capacity stands out as the major factor in assessments of the Division of R&D Utilization. Although there are some indications of problems in this area, insiders do not carp about them and one insider vehemently put forward the view that money and size have nothing to do with effectiveness.

Outsiders were far more preoccupied with capacity issues than insiders as judged by interviews: eight outsiders made 29 comments related to this category, whereas four insiders made only 8 comments.

Substantively, the outstanding capacity issue noted by insiders and outsiders was work load. One senior outsider said that the utilization unit was "drowning in just getting material out to people." Another echoed this observation by saying that staff time and size limit what the unit can do. One senior insider said that most problems revolve around time and work pressures and overload on the staff. Most outsiders seemed very sympathetic and appreciative of what the unit has been able to do within these limitations, although one person believed that many contracts could be performed more efficiently with greater utilization impact if they were done in USES (the agency with line responsibility to the field) "because USES has got the organization to deliver."

A major saving factor for the unit was the unit's leadership. Insiders and outsiders commented favorably on the director's knowledge and commitment to utilization, and the esprit d' corps, creativity, and flexibility of the Division which were seen as consequences of his efforts.

In summary, therefore, we can say that wealth and power capacity factors were inhibiting but not crippling because of inherent capacities and talents of the Division's staff to make the most of what they have.

Openness

This term has many connotations most often associated with the personality and the psychology of individual persons, but in a D&U context we would prefer to limit the term to mean simply the "readiness to give and to receive new information." Using this definition, we noted 42 comments pertaining to "openness" in the interviews. There are two complimentary questions that need to be asked: first, are the Division and ORD open to their important audiences and publics and, secondly, are these most crucial audiences open to ORD and the Division. On the first point the answer seems to be yes. The Division in particular puts great store by its openness: they always try to respond to requests from any source; they actively seek out potential users both to ask what they need and to tell them about new items which might be of interest; and they try to get users involved in reacting to research proposals. To serve these ends, they use many media including person-to-person visits to key persons, preparation of written policy briefs, demonstrations at conventions, etc.

The second question, that of the openness of others to ORD and the utilization Division, must be answered somewhat differently for different levels. At the higher levels of policy making within the Department of Labor there appears to be considerable openness. Policy makers were reported by one reasonably high source as "receptive to research results and even asking for more." One indication of this eagerness has been the specific request from the Assistant Secretary for Planning, Evaluation, and Research (ASPER) for briefs on research reports which spell out policy implications. There is also some feeling that these same policy makers do not convey their enthusiasm down the line and to the field. Some members of ORD would like to see a louder and clearer sanctioning of research utilization from the top. There was also some complaint in the Division of "restrictive media policies," presumably laid down from on high, which inhibit fully adequate mass dissemination of important findings.

However, most comments concerning lack of openness pertained to the wing of the Manpower Administration with the most field responsibility, namely USES. One Division staff member noted "a traditional mistrust between operating and research people." One policy planner felt that program people have "short horizons" because they are required to meet present problems. Another Division respondent said that he had also initially found it difficult to get important information out of people in USES. As noted elsewhere in this report, ORD-USES relations keep coming up in our interviews as problematic. "Openness" is a big part of this picture, although we cannot be sure whether it is a cause or an effect or perhaps merely a symptom of a more fundamental difficulty.

Perhaps partly because of the gatekeeping powers of USES in this regard, relations to regions and states were also noted as being weak. Whether this was a true lack to openness in the field or merely a lack of contact is hard to judge. Certainly when Division staff put on displays at professional conventions, they are overwhelmed with follow-up requests: sometimes as many as 1000 requests from a single convention and 500 for a single report displayed at a convention have been counted. These figures suggest a good deal of openness and a great need for R&D outputs at certain levels. Unfortunately, the Division is usually too busy responding to such waves of requests either to note the types of audiences being turned on or to assess the true ultimate impact on these audiences.

Reward

It is a fundamental psychological fact that rewarded behavior tends to be repeated. This principle applies very strongly to sending and receiving messages: people won't keep doing either for very long unless there is some sort of direct or indirect reward or reinforcement for doing so, nor will messages have "impact" if they have no reward value for those who receive them. Hence the pattern of rewards for D&U has to be observed and rated for its adequacy for all parties to the exchange if we are to make an adequate diagnosis of D&U problems.

Using this definition, we find very little focus on reward issues in the interviews (22 comments in all, 10 from 7 outsiders, 12 from the six insiders). The Division is rather proud of its careful husbanding of financial resources and its use of them to prime the pump in certain areas. Relatively modest grants have been made to unions and to professional groups to "subvert from within" to involve these potential users in utilization efforts. The TAT project was noted by a respondent as one that was initially funded by ORD but now operating without such funds, with Union Carbide agreeing to pay for the training of those people they were hiring.

The importance of rewarding the researchers or the ORD staff, itself, was rarely mentioned. One high level respondent suggested that the interest of the researcher was a crucial factor, while another noted that the user had to be involved and that his self-interest had to be appealed to.

The Division director noted that his D&U Division often does not get credit for its own work, but that this did not greatly disturb him. In any case, Division staff may get their rewards in different ways, e.g., through their esprit and the innovative atmosphere generated in the Division.

We believe that the reward systems of the various segments of the Manpower Administration would explain a good deal about linkage problems, especially among ORD, OPE, and USES, where linkage difficulties abound. Some rewards can even come about through effective communication alone. For example, one OPE staff member noted that ORD often sends proposals for his comment but that he gets no feedback on what they did as a consequence. Possibly such feedback loops could be initiated by promulgating a formal policy to this effect, at least on a trial basis.

Energy

Everett Rogers and others who have studied the influence of various factors on the diffusion of innovations have noted that success is often correlated with degree of effort invested by the change agent, himself. Although we are not sure how this concept manifests itself in the workings of a federal research utilization program, we thought it would be a worthwhile dimension to consider. The term "energy" is used here to denote larger than normal investments of time, effort, persistence, agressiveness, and concern for acting early and moving quickly.

Twenty-five comments seemed to fit this category, 13 from insiders, 12 from outsiders. One Division staff member noted that "a good project officer with commitment to utilization and interest in getting spin-off" is an important facilitating factor, while a "lazy" project officer who doesn't get involved is an inhibiting factor. This statement is close to the essence of what is meant by "energy." In fact, as a matter of deliberate policy through the "buddy system" and other means, the Division stresses the importance of involvement from the beginning. Probably the most important thing that can be done by any agency to get utilization is merely to stress it, to say it is important from the beginning and continually throughout the course of a project. One ORD staff member exemplified what seemed to be a general attitude with this statement: "I work with a project and do everything in the name of getting it utilized and consult with Drob as I am doing this."

Synergy

"Synergy" basically means the combined action of different forces to produce a single effect. It has been observed in past D&U studies that utilization was not the result of one factor or two factors operating additively but was the result of a combination of factors that went together in a certain way. Personal influence, for example, is very important in bringing about change but usually works only when it is (a) responsive to an internal need in the user, (b) supported by reasonable evidence of effectiveness, and (c) offered by more than one source. We wanted to see if federal D&U units manifested a synergy principle in any of their strategies.

In our interviews in the Manpower Administration, we turned up 23 comments which might be interpreted in this way. It is clear that the "synergy" idea in some form or other is important to many of our respondents but expressed differently. One respondent stated it in the following way: "You must fit the right man at the right time--you must have a current hot item." Another echoed this view by saying, "it's the right idea whose time has come that counts." "Timing" was repeatedly noted as a major positive factor and is one important aspect of synergy; research input must come at the same time as other inputs to users such as *awareness of need, urgent pressure to change, the opportunity to move in a new direction, the sudden acquisition of new resources or the necessity of making a decision.*

A synergic strategy requires two things above all: first, a continuing awareness of current user needs and situations, i.e., "where the user is at" and secondly, a coordination among resource persons and groups so that joint timing is possible. On the former point, the D&U Division in the Manpower Administration can claim some success in specific areas. In some projects in which user involvement is stressed from the outset, both users and researchers have a chance to keep track of where each other is going from one time to the next. For users in general, however, it is difficult if not impossible to retain such an awareness. To some extent, the Division and ORD as a whole depend on signals from higher up and from Congress to judge what is needed at specific times, but some insiders felt that they were "operating in a vacuum" since they do not know what policy issues are important to decision makers.

Since planned synergy is such a difficult strategy to work on, disseminators often fall back on a strategy which might be called "natural" or "serendipitous" synergy. What this means in practical terms is that one floods all media with as many "potentially" relevant messages as possible and keeps repeating the messages so that users will be able to review them whenever they are ready, wherever they are, and whatever medium they are attending to. In many respects the U.S. market economy works just this way. We did not find too much of this "flooding all zones" philosophy in the Division. Indeed there was a tendency to be selective in choosing audiences and timing inputs and to play down mass dissemination activities.

One ORD staff member outside the utilization Division may have expressed the synergic principle when he said "we play the orchestra as we think the music will best be heard," employing memos, monographs, letters, and research academicians in whatever combination seems best to get across a particular message to a particular audience.

C. THE UTILITY OF H-E-L-P S-C-O-R-E-S ANALYSIS

We should recognize the fact that we are still at an early stage in understanding D&U phenomena. Thus, elaborate statistical and conceptual models are probably not going to fit the facts of very many specific situations. It should also be emphasized, however, that HELP SCORES is not a theory in this sense but rather a set of broad and distinct descriptors for aspects of D&U process. Most of the ten concepts can be applied to any *transfer situation* or D&U happening, regardless of where such a happening may be located in the knowledge chain described in Chapter Three.

In the previous section we offered a very small test of this 10 concept approach by coding 403 process comments or statements from 15 interviews. It is our view that the 10 concepts covered comments from all persons interviewed quite well. Table 7.11 provides quantitative overview. As indicated in this table, the 10 concepts are not of equal explanatory power. "Linkage" and "structuring" account for over half the total comments coded, and "openness" and "capacity" account for nearly another 20%. "Empathy" and "homophily," on the other hand, seem to play only a minor role in the thinking of these respondents about D&U, together accounting for only about 4% of total comments.

[Insert Table 7.11 here]

TABLE 7.11 H-E-L-P S-C-O-R-E-S Within the Manpower D&U System (An Analysis of 403 Process Comments from 15 Interviews)

	Staff of the Division of R&D Utilization		Personnel Outside the Division		
	Number of Respondents (Total=6)	Number of Comments	Number of Respondents (Total=9)	Number of Comments	Total Comments
Homophily	(3)	4	(3)	3	7
Empathy	(2)	4	(4)	6	10
Linkage	(6)	63	(9)	62	125
Proximity	(6)	9	(7)	9	18
Structuring	(5)	29	(9)	65	94
Capacity	(4)	8	(8)	29	37
Openness	(6)	20	(7)	22	42
Reward	(6)	12	(7)	10	22
Energy	(6)	13	(8)	12	25
Synergy	(5)	6	(7)	17	23

We have some sense that the low-scoring factors are low in part because they have been less visible and have been given less focused attention than some of the others. The pattern of responses undoubtedly also reflects the pattern of the stimuli which certainly bias the response distributions among the 10 code areas; for example, many of our questions stressed communication, and linkage mentions are probably increased because of this. The comments in this case have been coded into the schema post hoc with some success but, if we are to pursue such an approach, there is now the need to present the schema to respondents more explicitly, factor-by-factor, to elicit more specific responses.

We believe that HELP SCORES shows promise of becoming another useful descriptive schema for analysis of D&U activities, D&U strategies, and D&U systems, and one which cuts across the functional analysis of Chapter Four such that each act of transfer can be subjected to it, whether such act occurs within the user system, in need communication, within the resource system, or in transfer from resource to user. Even in its present form it has provided a different view of the Manpower Administration's D&U system as reflected in the comments of 15 persons very centrally linked to or associated with that system.

We can further simplify and summarize our conclusions here and illustrate how they converge with those of the first part of this chapter by grouping the responses in four conceptual clusters as follows:

(1) Linkage and Proximity: 143 Comments
(2) Structuring and Synergy: 117 "
(3) Capacity, Energy, and Reward: 84 "
(4) Openness, Empathy, and Homophily: 59 "

There is some logical justification for each of these couplings. Being physically close or in contact and being linked together are clearly related and often hard to separate in coding. There is also a dynamic relationship between linkage and proximity in that proximity greatly increases the probability of linkage and good or strong linkage tends to lead to associations and meetings which bring people together physically.

"Synergy" requires the joint efforts or effects of several inputs simultaneously or in succession. This may occur by chance and often does in real life, but a deliberate strategy of synergy would certainly require a good deal of advance planning and structuring.

"Energy" can be seen both as a consequence and as an aspect of high "capacity," while "reward" can be seen as both a cause and an effect of both, i.e., one aspect of high capacity is being able to provide rewards, and receiving rewards builds one's capacity. The prospect of reward tends to release energy, and the expenditure of energy, especially by a high capacity system, leads to rewards. Thus in several ways, these three concepts are intertwined.

Finally, the notion of "empathy" implies "openness" to others while "homophily" describes an important precondition for both "empathy" and "openness."

These four logical clusters dovetail in an interesting way with the factorial dimensions discussed in the first part of the chapter, and especially with the three items which we selected out of the 20 "procedures" as most salient and representative of our principle findings. "Linkage and Proximity" fits nicely with the top-rated item "Collaboration and cooperation between researchers and users to find and adopt what is useful." "Openness-Empathy-Homophily" relates somewhat clearly to the item "Adequate diagnosis of the real user need" and finally "Careful organization of the planning and implementation efforts" is very closely related to what we have been calling "Structuring and Synergy" in this section.

We are left with the "Capacity-Energy-Reward" cluster which also bears a close likeness to the Capacity dimension which emerged so clearly and distinctly from our factor analysis.

We cannot claim that the data offered and the analyses attempted in this chapter lead us to any firm or final conclusions with respect to D&U process, but there does seem to be a convergence with respect to at least four clusters of variables. The strongest and most salient of these is *linkage*, the connection and two-way communication among users and resource persons at all levels. A good utilization system is, above all, a highly interconnected and interactive system with no gaps between key users and key resourcers.

Secondly, a good D&U system is highly *open and responsive to user needs*, understanding and appreciative of the user's situation and able to diagnose his needs accurately and completely.

Third, a good D&U system is clearly *planned, organized and coordinated* to achieve its objectives, using systematic evaluation and feedback to maintain quality control and improve functioning.

Finally, a good D&U system must have the capacity in financial, personal, and motivational terms to support its objectives and reward those involved either on the sending or receiving ends of the problem-solving dialogue.

CHAPTER VIII

POTENTIAL PRACTICE MODIFICATIONS

I. INTRODUCTION

The schema elaborated in this report can best be judged by its power to provide useful guidelines to action for those engaged in D&U programs. At this point, therefore, we would like to bring together our observations from the four agencies, the two surveys and the two conferences, to summarize and to derive implications for action, following the major categories of analysis.

A. SUPPORT OF USER SELF-SERVICING

> "An effective and progressive user self-servicing subsystem has a good localized problem-solving capacity, maintains a continuing awareness of its needs, present and future, knows how to express its needs to potential resource persons and groups, looks outward and inward for innovations, and is able to adapt new ideas. Maximal D&U activities in this area would focus on helping the user help himself by providing training or support on any of the above sub-processes."*

We have found that each agency studied sees this as an important area but not necessarily one that they have the capacity or the jurisdiction to work in. None of these four agencies sees the user as the passive recipient of information; all accept a self-servicing problem-solver definition of clients and client systems. The real question for them, then, comes down to this: *What are the limits of responsibility and capacity of a D&U unit?* If the client group is relatively well defined and limited, it is possible for a D&U agency to provide the kind of consultation and support implied by this function. Thus in the case of the NIMH unit, where community mental health centers were the primary client, such help was provided directly by agency staff. At the other extreme, the NCEC, with a client population of 20,000 school districts, hundreds of thousands of teachers, and sundry educators, can hardly expect to indulge very heavily in direct support of user self-servicing. On the other hand, NCEC has developed a strong philosophical orientation compatible with user self-servicing and problem-solving and tries to find ways to fill its other D&U tasks in accord with this philosophy. Both the NIMH and NCEC strategies in this regard are reasonable but require entirely different types of resource allocation and organization by the federal agency as a whole. To adopt an NIMH strategy to serve all clients of a particular federal agency would be very costly and would require a complete rethinking of both the meaning and significance of D&U at the top levels of government.

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*For readers' convenience we will repeat descriptive summary of each model component from Chapter 4.

A large number of psychologically-oriented change theorists endorse the strategy of supporting user self-servicing.* There is sound logic and some evidence to support this "client-centered" approach to helping. However, there is a danger in exclusive reliance on such an approach, namely, that the legitimate value of outside knowledge, especially that based on valid R&D effort will be discounted or ignored. We feel that this danger is real because change experts, trainers, and consultants tend to cluster according to ideology and to see other emphases as representing competing ideologies. In the minds of many client-centered change specialists, any emphasis on knowledge transfer represents such a competing and distrusted perspective. It is difficult to find persons who represent a dual orientation on the importance of both user self-helping and transfer of expert knowledge to the user from outside sources.

Assuming that in the near future D&U units will not have greatly increased power or resources, we would make two summary suggestions regarding user self-servicing. The D&U unit must assume:

(1) that the user can help himself on many aspects of problem-solving and

(2) that for the extent to which major help can be provided by the federal government to users on the process of problem-solving and self-improvement (personally or organizationally), other branches of government will need to provide it.

On a more specific level, there are three types of actions which D&U units might contemplate. We will rate the pros and cons of each in turn below.

1. Training in Problem-Solving Procedures for Practitioners (exclusive of training in research utilization, per se) [Improvement Option #1]

None of the D&U units engages in this activity to any extent and, given their limited resources, this seems wise.

We feel that there is a great need throughout the society and particularly in the professions and service-providing organizations for improving these skills. There are training programs and packages available in this area. However, the reliability and long term benefits of such programs are generally not proven and the cost can be high particularly in terms of negative ripple effects from unsuccessful training efforts which could put the whole D&U function in a bad light in some circles. Our own experience with two conferences in which some problem-solving process training was included suggests very great differences in receptivity to this approach. Most experts in this field would argue that problem-solving process training is not a task which can be undertaken from a distance by personnel busy with other activities.

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*See for example: Bennis, Benne and Chin, THE PLANNING OF CHANGE, 1969.

The most effective models for such work involve long term commitments from process training experts willing and able to learn the operations, goals, and problems of their client organizations thoroughly. Quick courses in management or sensitivity training, in general, are not effective for improving group process.

Two additional difficulties should be pointed out: first, it is almost a truism that the groups most in need of process development are the least willing and/or able to seek out the help they need. Second, changes in process are vexingly difficult to evaluate for "hard" improvement in production of the organization, at least over the short run.

Thus, the appropriate stance of the D&U unit vis a vis process training probably should be that of a concerned outsider who may be able to suggest this work to organizations who appear open to it, or who might strive to create conditions in which the need for process training becomes clear to organizations which are not initially open to the suggestion. The D&U unit, through its contacts with these systems, might serve as a linker or resource bank by keeping a file or personal contact with skilled process trainers.

It is usually unrealistic to expect effective problem-solving processes to develop in short-term, temporary groups -- even with expert process guidance. The two interface conferences attest to this fact. D&U is a complex field within which we cannot expect any temporary group to be able to derive specific actions for change in a limited period of time. Thus, D&U staff might wish to consider the development of long term problem generation/analysis/solution mechanisms, and apply the best problem-solving processes known to the establishment of these activities. It could be argued that such long-term training-consulting projects could be cost effective if they were provided to a clearly defined client group of very high power and high relevance to the D&U unit (such as the Planning Office, Bureau Chiefs, etc.). However, it is difficult for lower power groups to initiate such activities for their own superiors. Again from the interface conference experience we found some difficulty both in attracting higher level persons to participate and in holding their attention, once they were present. These problems are solvable but they must be confronted and planned for in advance.

2. Organizational Development (OD) Consultation and Intervention [Improvement Option #2]

The same types of considerations which apply to process training also apply to OD and similar types of interventions. Cost is high and efficacy is uncertain. The NIMH unit has involved itself in a kind of OD consultation with community mental health centers but has been careful to keep this on an informal basis. Manpower has sponsored one Laboratory (in Michigan) where organizational survey and feedback (a type of OD) was tried out in a number of employment services with mixed results. A major stumbling block for this activity was gaining access to sites. In the case of NIMH an expectation was already in place that the Washington office had a legitimate right and obligation to provide some sort of help and guidance to local units. The Manpower D&U unit has had no such sanction, and entree is a continuing problem.

It may well be that some sort of organizational development work is a prerequisite to adequate research utilization on the argument that learning cannot take place from outside until there are adequate structures and linkages within the organization for communicating and transforming knowledge received. Utilization usually means change, and many organizations must first learn how (cognitively and behaviorally) to change. If this is the case, then federal D&U units should be linked to other agencies of government responsible for organizational renewal. In the case of SRS, for example, an office of Organizational Development did exist which might have played an important cooperative role with the Research Utilization Division.* In any case, the D&U unit should not take it upon itself to fulfill this function on its own.

3. Development or Adaptation of Systematic Tools and Handbooks for User Self-Help [Improvement Option #3]

One way in which D&U agencies can fill a useful role with respect to user self-servicing is by developing specialized "process" handbooks. All four of the agencies studied have been in the handbook business but not all have developed handbooks and materials exclusively focused on the *process* of problem-solving. NIMH and NCEC have both sponsored wide ranging literature reviews on change strategies with a focus on research utilization. In each case both compendia of findings and more practically oriented guidebooks have resulted. What still seems to be needed are experiments to find optimum means of disseminating and gaining full utilization of such items. It is also not known who uses these hand books, for what purpose, whether they improve problem-solving for those who use them, and whether they have any effect on the dissemination and/or utilization of relevant research and development.

The Manpower Administration has done the least of the four agencies in this area and might well consider adapting and combining elements of existing works from the other agencies with a special concern for Manpower users. As an approach to user self-servicing, we believe that handbooks on the process of change might have relatively high pay-off for little investment for several reasons:

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*This office was abolished in an SRS reorganization in the fall of 1973.

(a) low initial cost of development especially because similar works of reasonably high quality can be adapted.

(b) reproduction and dissemination is relatively cheap and simple.

(c) there is minimum threat; potential users can choose to scan, read or absorb whatever parts of a book they deem relevant or interesting and they can do so at a time, place, or situation of their own convenience.

(d) information on processes of change can be generalized to a broad range of situations.

(e) information on process is less likely to become obsolete than detailed information on particular programs or particular R&D projects.

If this is a route that the Manpower D&U unit wishes to pursue, they should be especially concerned about two issues: first, to get writers of the highest calibre and understanding to do the work, and second, to get writers who can present a balanced perspective on change which includes R&D utilization as an important element.

Such print systems should be evaluated against good in-person process training however, especially considering the points made earlier about the difficulties of doing process development by "long distance."

In general, it would appear that support of user self-servicing is more important to the D&U unit as a guiding philosophy or ultimate goal than as a basis for particular program thrusts. The unit should always be seeking ways to encourage better user problem-solving without accepting primary responsibility for either training or consultation in this area unless it can combine forces with others on whom this responsibility naturally falls.

B. NEED SENSING AND NEED COMMUNICATION

"Maximal D&U functions in the area of need processing would include various activities required to communicate user needs to resource persons and systems. Transformation activities such as need arousal, need sensing, need definition, and needs assessment are necessary for transmission of needs to policy makers and to the R&D community. Additional specialized transformations include the translation of need priorities into research and development programs with dollar authorizations and into problems amenable to R&D."

It is safe to say that D&U units will never be seen as the prime agents or conduits for need sensing and communication. To start with, at the macro level this has been traditionally a political process. When the members of the society feel a sense of urgency about one problem or another, they communicate their feelings to elected officials or they elect new officials who say they can do something about these things.

Actually in a large and complex society the strictly political mechanisms are probably only relevant for setting the broad limits of policy especially at the federal level. Thus, judging what the people need and want is a complicated matter and practically every form of information gathering is used by federal agencies for this purpose from surveys to subjective judgments.

All four of the agencies studied are very sensitive to the problem of user need communication even though they have no major assigned responsibilities in this area. They recognize the fact that research utilization must be a two-way process involving dialogue and responsiveness by both the R&D community and practitioners. However, only the NCEC has conducted formal need surveys of varieties of users, while Manpower and SRS D&U staff rely heavily on guidance from higher authorities. In Manpower, high level outside advisory committees are important in addition to inside policy makers and planners; SRS in the last two years has moved very swiftly toward a formal and elaborate internal planning process. NIMH has up to the present relied heavily on expert opinion in the determination of priority "need" areas for research. Such experts generally are drawn from the R&D community, itself.

What is evident from our review of the need sensing and communication apparatus in all four agencies is its haphazardness and general lack of empirical basis. It is mostly founded on personal judgments and hunches of middle level government officials together with those members of the academic research community who happen to have good government connections. This also makes need determination susceptible to misrepresentation, sensationalism, and other distortions by need sensing through the media, from vocal partisans and from others who may not truly represent a system and its needs.

Lacking the authority or capacity to define user needs and to influence research to accord with such needs, the D&U unit is in a somewhat awkward position. As the disseminators, they are seen as representing the knowledge producers and are perhaps accountable for the validity and relevance of what is transmitted to users. The hope of the D&U staff must be that the storehouse of knowledge they have to work with is filled with material of reasonable quality covering a wide enough range of concerns to meet most user needs as they arise. For most of our agencies this is a forelorn hope.

1. User Information Need Measurement and Assessment [Improvement Option #4]

Only one of the four agencies, NCEC, has made any significant thrust toward quantitative information needs assessment on a systematic basis. We do not know why the other agencies cannot begin modest experiments in the same area. A first step is to define as clearly as possible who the potential user populations of the agency are. A second step is to prioritize these users, and a third is to determine how they are currently being served. Beyond these steps there are a variety of ways in which needs might be elicited. Traditional surveys may yield only laundry lists of traditional topics, but intensive interviews and/or observations of representative users in their work situation might provide a function of more substance. It is also possible and desirable to assess needs in terms of *reactions* to samples of information input. Many users will be only dimly aware of many of their information needs, but are able to respond "Yes that's what I want" when they are given enough different samples of information to try out. Eliciting such feedback can also have a secondary benefit for the D&U agency by demonstrating a concern for dialogue with the user and responsiveness to him.

We believe that traditional survey approaches to needs assessment are useful only to reaffirm and to assess the current levels of need according to traditional need categories, and they ignore the important steps of "Need Arousal" (2.1 in Figure III-3) and "Need Definition, Redefinition, and Analysis" (2.3 in Figure III-3). If new needs, reformulated needs, and important latent needs are to be assessed, users must first be stimulated to think in new ways about their situation. The D&U unit could play a very important role here by commissioning well-written and provocative essays by knowledgeable and thoughtful persons in the field, proposing such new need constellations. Such papers could then be disseminated among relevant audiences and used as *stimulators of a new need consciousness* prior to or as a part of any needs assessment surveys.

Such a stimulus-response approach to needs assessment might not yield data any more valid than traditional approaches, but it would indicate a great deal about (a) the stability of self-perceptions of need, and (b) the willingness of users to think about their need situation in new ways.

2. Responding to Stated Needs as a Vehicle to Greater Need Awareness and Awareness of Resource Alternatives [Improvement Option #5]

The D&U unit may feel frustrated by the types of response it receives on user "needs," either because they are superficial, or call for information beyond their capacity to provide. For example, in both user network surveys conducted for this project, the highest "need" expressed by both federal policy and administrative personnel and practitioner groups was for information on how to evaluate performance and on statistical data of various sorts pertinent to such evaluations. Even if they had no initial competence in such areas, the D&U unit might want to tool up to provide some such services and/or to link these users with others who could provide them. In the course of so doing, however, the D&U unit should (a) piggyback additional R&D information which they feel might prove germane to real user needs, and (b) ask for feedback from users regarding satisfaction with material received, redefinition and further specifications of the original need, and articulation of new needs. Both the information and the feedback request might serve to reeducate the user regarding both his true need situation and the type of services which the D&U unit might be able to provide.

3. Long Range Need Definition and Forecasting Mechanisms [Improvement Option #6]

A matter of continuing frustration to D&U units is the long turn-around time between the identification of important needs and the availability of new R&D products relevant to those needs. In some areas the R&D output is need relevant but relevant for a need which was salient a decade ago! If turn-around time is 5 years or more on a complete cycle of research, development, evaluation, and dissemination, then needs must be held constant or must be predicted at least 5 years in advance.

Need forecasting is certainly a crude art, but it is obvious that we should try to do it and, at the very least, we should try to find out how to do it. The D&U unit does not necessarily have the assignment of organizing think-tanks and the like to work on such matters, but they are in a critical position with respect to one aspect of forecasting, namely, the prediction of future needs from current reactions to new inputs by opinion leaders and innovators.

A considerable body of research indicates that new ideas, innovations and even perceptions of need spread in a predictable manner through the social system starting with key influential persons and persons with a history of adopting new ideas early; if such individuals can be identified, their reactions to existing R&D products or to need stimulus essays (such as suggested under point B-1) should be predictive of much more widespread concerns of 5-10 years hence.

C. BRINGING PRESSURE TO BEAR ON THE R&D COMMUNITY

> "Although most solution building functions lie outside of the domain of D&U, three processes can be identified as maximal D&U activities in this area: influencing R&D to be more relevant to society; influencing R&D to be more disseminable and utilizable; and research on the process of utilization itself."

Early patterns of research support in social problem areas followed a model which had seemed to be successful in the natural sciences, namely to allow the research community, itself, to govern and to assign awards on the basis of merit as methodologically sound research and as contributions to a coherent body of knowledge. There is less and less patience with this approach on the part of government agencies today and more of a tendency to demand or encourage by whatever means R&D products which have demonstrated relevance and utility in the specific areas of concern to policy makers.

There is still some confusion, however, about how best to bring about a greater responsiveness and a more earth-bound and practical orientation on the part of the R&D community. One approach, tried most extensively by OE and SRS among our agencies, is to develop short and long-term (one and five year) plans including specific objectives, and to provide R&D funds only for work which clearly pertains to those objectives, usually by competitive contracts following issuance of a "Request for Proposal" (RFP). This highly planned approach appears logical at first glance but it rests on two shaky assumptions:

(1) that the officials who develop the goal statements and write the RFP's have the requisite expertise and the best grasp of the situation; and

(2) that the most competent and conscientious members of the R&D community will come forward with proposals, and will win the competition for contracts.

With respect to the first assumption it is probably true that federal officials are in the best position to take a truly national perspective on problems, but they are generally not the persons with the most expertise on any given topic and they are rarely afforded the opportunity either to understand user problems in depth or to reflect on the kinds of R&D that would best meet the needs of the country.

The second assumption holds true only in times of extreme scarcity and even then only for those R&D persons who do not have tenured teaching positions on prestigious university campuses. Thus, for example, in the late 1960's when the USOE threatened to terminate a lushly funded R&D Center at Harvard's School of Education on grounds of relevance, the Harvard professors thumbed their noses at the government and went about their business. The Center was terminated; the loser was probably the public.

The NIMH Branch that we studied is probably the most highly sensitive group in NIMH to questions of relevance and utilization; yet they feel the need to work in a very careful and diplomatic way with their academic advisors and with their grantees to instill some degree of relevance in the proceedings.

Between the NIMH and the OE approaches there must be some middle ground which entices the best scholars to work for the good of the society as a whole while retaining a sense of independent judgment and self-control which seems necessary for the best scientific work.* We understand the frustration of government administrators and the temptation to produce relevance by exerting power and coercion on the scientific community, but we doubt if these stringencies will produce the desired effects for the reasons stated, i.e., (1) that the government at any point in time doesn't really know exactly what its needs and top priorities are, and (2) that the best qualified and most imaginative R&D people won't work for them if they have any alternatives (which they almost always have).

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*See the work of Pelz, Donald C. and Andrews, Frank M., Scientists in Organizations (Wiley, 1966) for findings on the need for tension between autonomy and stimulation from others and from problems to bring about maximum productivity and creativity in the scientist. The "trick" in applied R&D is to work clients and their needs into the scientists' awareness so that real life problems provide part of the stimulation, diversity, and "dither" so necessary for scientific creativity.

1. Require Need Relevance in R&D Proposals [Improvement Option #7]

All of the agencies studied had some sort of mechanism to require or encourage need relevance in proposals. In SRS and OE the bureaucratic machinery of a formal planning process played a large role, and the D&U unit as such had very little if any influence on research funding or proposal writing. The NIMH utilization staff had a great deal of informal influence through pre-submission discussions with prospective grantees and through proposing and gaining acceptance of relevance-related selection criteria by their outside review panel. None of this influence extended beyond the branch to other research funding units in NIMH, however.

It is possible and reasonable for government to mandate need relevance in all proposals, particularly those submitted to agencies with a specific set of service-supportive goals (such as all of the agencies we were studying). The problem, however, as with all mandates is to get compliance with the spirit and not the letter of the law. A research investigator can always wind up with a need rationale which sounds convincing and sometimes may even be able to cite supporting diagnostic data. But where does his real interest lie? and has he thought very deeply about the problem? The NIMH approach of pre-submission dialogue may be somewhat effective, but it seems rather weak. A more powerful inducement might be a small grant or a consultation contract for a few thousand dollars to explore the need area in depth, review the literature and visit a few sites to get a "feel" for what is really going on. The grantee would then be required to submit a mini-report on his diagnosis prior to being awarded the grant for the larger project.

2. Require Specification of D&U Program in R&D Proposals [Improvement Option #8]

Of special importance to the D&U unit might be a requirement in all research and development proposals that specific plans be spelled out for marketing, dissemination, and utilization of the final report or product. Such a requirement is already operational in SRS but results on effectiveness of the approach are not in.

There are a number of reasons pro and concerning this idea. On the plus side at least four points can be made. (1) It might force a greater awareness of and sensitivity to D&U issues on the part of the R&D contractors and grantees. Simply by going through the exercise of considering audiences, media, form of presentation, time and place of presentation, implementation, and inducing behavioral changes, the R&D person would become more aware of the variables involved, the complexity, and the greater social context in which his output must find its way. (2) It might generate new ideas for the government on strategies and tactics of D&U, new conference formats, new audiences, new media and media forms, etc. This outcome would depend on R&D personnel taking more than a perfunctory approach to the mandate. (3) The flood of D&U plans from individual projects at the proposal and funding stage would give the D&U unit considerable advance information for planning integration and support of D&U 2-4 years hence. This assumes that the plans are meaningful and realistic and that the D&U unit would have complete access to them. (4) Lastly, such a procedure might actually increase the speed and amount of dissemination and utilization which takes place. We are still rather ignorant about "natural" diffusion patterns, i.e., the extent to which new knowledge diffuses simply due to incentives and institutions already present in the society without any deliberate effort by government to push D&U. It is reasonable to suppose, however, that special planning and effort expended in this direction does have some additional effects over what occurs naturally.

Several disadvantages to the D&U plan requirement are also evident. (1) Not all R&D products are equally worthy of the widest dissemination. If they are poorly done or lead to no useful outcomes, D&U planning might best be directed toward a dignified burial. Encouraging or forcing a D&U plan in advance might raise expectations and get a ball rolling which shouldn't roll at all. (2) Even for worthy products the appropriate channels and means for D&U may not be evident in advance. In the course of a project various types of linkages are created and opportunities for D&U laid bare which the investigator could not have been aware of initially. This is especially true for young investigators who are building a reputation. (3) Even more problematic is the question of the investigator's expertise as a disseminator and utilization consultant as distinct from his expertise in research and/or development. D&U, in our view, implies an entirely different set of knowledge, skills, and attitudes. Therefore, while the D&U plan mandate might recruit (or subvert) R&D persons to fill the D&U function (where we have a distinct manpower deficit) the assumption that every researcher can thereby be transformed into a D&U specialists is faulty. The federal D&U unit might be stuck with a lot of bad plans drafted by disinterested or incompetent investigators and some of these plans might actually be carried out! (4) Alternatively, rather than involving themselves in the exercise, many researchers may prefer to "hire" D&U experts onto their staffs for proposal writing, without learning anything themselves, or integrating the concepts in their research. (5) Finally, the most telling argument against a specific D&U plan mandate centers on the question of efficiency and cost-effectiveness. There is tremendous waste in planning a separate D&U strategy for every single R&D product. The very existence of a federal D&U unit implies the need for coordination and centralization of at least part of the effort.

In sum, it would seem that the government should move cautiously in this area. If specific D&U plans are viewed as essential at the beginning, there should also be various means to provide guidance to the investigator on questions such as appropriate media, access to audiences, and perhaps alternative strategies of change and knowledge utilization. Such planning should also be informed by an understanding of the federal agency's total D&U program, strategy and philosophy; and should be cast in such a way that combining and coordinating with other D&U efforts is not difficult.

3. Ask Researchers to Write and Prepare Output for Non-Research Audiences [Improvement Option #9]

While there are many arguments against assigning complete D&U responsibilities to researchers, there is a strong argument for involving them in some ways, particularly in certain writing tasks and in deriving implications for various users. By tradition researchers (but not developers) prepare their output primarily for other researchers and do not spend much time writing for non-researchers who could make use of their findings. It would seem that all researchers should be required at a minimum to spell out the implications of their findings for policy makers, practitioners, administrators, the general public, and the client groups in the need area concerned.

There are at least three important reasons for imposing such a requirement. In the first place, researchers should become more skilled in communication outside their specialty particularly to user audiences. In almost all cases, such practice will be of benefit not only in improving the capacity for linkage within the macrosystem but for the researchers themselves in achieving greater recognition and more sympathy from those who have grant money to dispense.

A second reason for researcher involvement is their expertise. No one has a better grasp of the essential meaning and limits of a research project than the investigator himself. Hence, if he is not thoroughly probed at or near the end of his project, a great deal of the key information will be forever buried or revealed only by the digging of the most persistent and thorough scholars.

A third reason is the great need to improve the capacity of all members of the problem-solving macrosystem in deriving implications for action from research. This is not a simple or self-evident task. A good research report on a significant problem area, whether it is intentionally descriptive or prescriptive will contain a multitude of implications for all the persons in the society who must relate to that problem including high level policy makers, practitioners, other researchers and consumer-clients. Usually a good research report will have something to say about the *definition of the problem or the need, underlying causes, potential alternative solutions,* and persons who might be able to assist in building solutions, choosing among them, disseminating them, or implementing them. Of course, in most cases, these implications will not be obvious or explicit; they need to be drawn out. It is also true that some inferences may go beyond the data at hand or may be only inklings or suspicions. Nevertheless, they increase our capacity to think about the problem constructively and rationally.

Squeezing implications out of data is not necessarily something the average researcher is trained to do or likes to do. Many are trained to be *very cautious* about drawing any inferences which cannot be supported statistically with specific data. This is the appropriate stance for a scientist to take, especially when his prime concern is building a sound, valid and reliable body of knowledge. But for those who must act within hours, days, or weeks, regardless of the soundness of the available data, a hunch based loosely on research is better than a hunch based on nothing at all. Researchers must come to accept and appreciate that fact, and within such a context they should learn to be as helpful as they can possibly be.

4. Transform Researchers into Disseminators [Improvement Option #10]

Any researcher who also teaches courses in his specialty is already a disseminator, whether he recognizes it or not; yet most R&D personnel do far less disseminating than they are capable of and provide far less help in utilization and implementation among users than is needed and than they have the capacity to deliver.

As D&U functions assume greater significance in the thinking of government planners and decision-makers, as we believe they will do continuously through the next decade, there will come a growing recognition of severe manpower shortages in the D&U area. For every basic researcher, applied researcher, and developer in a given social problem domain there should be at least one disseminator and one utilization specialist. The ratio in the field of agriculture where a fully developed D&U network already exists is at least that great.

It is obvious that not all researchers are going to make good D&U specialists, and for that reason a blanket policy of forcing investigators to undertake D&U activities for their projects should never be used. But the D&U unit should survey R&D investigators for signs of talent and motivation to invest in D&U.

To support such a trend, the D&U unit should make available special kinds of training, consultation, and materials (e.g., guides on D&U process). There is available experience on all these matters among the four agencies studied which could be shared.

5. Vitalizing and Routinizing a Buddy System [Improvement Option #11]

The Manpower D&U unit is unique among all agencies we have studied in this project or elsewhere in initiating a one-on-one partnership between project officers in R&D and D&U. The "buddy system" as a concept seems to have much to recommend it. It incorporates the idea of continuous monitoring for D&U potential throughout the life of a project. It also divides the labor and the responsibility for different functions in a rational way while allowing for continuous dialogue and mutual influence between research concerns and utilization concerns.

There are problems, however. In the first place a one-on-one approach in which two project officers are assigned to a single project is a luxury most D&U units will not be able to afford. Secondly, the system applies only to relations within the federal agency's RDD&U monitoring units; there are no buddies for the investigators, themselves (and to provide them would be insuperably expensive and complicated). Thirdly, there are some intimations that the MA buddy system has been hard to maintain over a period of years, and that it has fallen into disuse in recent times.

Because of the promise of this innovation in D&U management, we feel that ways should be found to refine it and insure its continuance. A first step in this direction would be the tentative specification of a protocol for project monitoring which indicates the various points at which (a) input is required on D&U from contractors, (b) when review and sign off is required by D&U monitor, (c) where dialogue between research monitor and D&U monitor is required, and (d) where conferencing among all parties is required. We would add the word "tentative" because a first fix on this routinization formula would probably be over-elaborate in some areas while missing other essentials.

It would also seem desirable to extend the notion of the D&U "buddy" beyond the federal monitoring function to the projects, themselves. Ways should be found to bring together research investigators with D&U specialists from the same or different organizations early in the life of a project with specific agreement on both sides that they will work cooperatively through the D&U phases. Such approaches should be tried first only on a pilot basis with one or two projects and the collaboration effort should be evaluated carefully (perhaps by a third contractor) to determine feasibility and cost effectiveness of this procedure or variations on it.

We might also suggest that the model of D&U functions contained in this report forms one basis for constructing a routinized monitoring checklist for such experiments with the "buddy system."

6. Supporting Research on D&U [Improvement Option #12]

The special brand of research, basic and applied, dealing with questions of research dissemination, utilization, and the transfer of social technologies is very important for planning and directing the future operations of federal D&U units. Yet the amount currently invested in such research is exceedingly limited. Part of the problem may be that D&U agencies are seen as distinct from research sponsoring agencies and therefore have no business funding research. An associated problem to the lack of funding is the small number of qualified researchers who specialize in this area. A heavy reliance on such a small group of experts is probably always unhealthy for policy-making in any field.

It is very important in funding activities of a D&U agency to distinguish between D&U activities and research on them. In some cases, it is probably true that the investigator who initiated a research project can also manage some of the D&U relevant to it. It is less likely that he can also do research or careful evaluation of that D&U effort in such a way as to add to our knowledge on this special subject.

Among our four agencies, only NCEC has been able to launch a research program focused on D&U and even this has been extremely limited and essentially a sideline to their other activities. MHSV has sponsored a state-of-the-art review and two experimental D&U projects (by Glaser and Ross, 1971 and Fairweather, 1973) focused on two specific mental health innovations. SRS has recently been limited to evaluative studies of its products (e.g., R&D briefs) and its Research Utilization Specialist Program. It is our view, however, that MA has done the least of the four agencies in forwarding knowledge of D&U by sponsoring of such research, especially prior to the present project. This is somewhat surprising in view of the staff size of the D&U unit in MA and their relatively close working relationships with the rest of the ORD. Hence, D&U "doctrine" in MA is largely guided by expert opinion derived from the experience of the experts in areas of rehabilitation, mental health, education, agriculture, and other fields which may have important differences from manpower, particularly in terms of existing norms and networks for information flow. Our very discrepant experiences between SRS and MA in the two interface conferences would seem to bear this out (see again the concluding statement of Chapter VI).

D. TRANSFORMATIONS

> "Maximal D&U activities in the area of solution processing would include steps designed to move a valid solution idea into implementation in a user system. Such functions as transforming knowledge into usable forms, transmitting knowledge to appropriate audiences, and helping people to use knowledge would be subsumed under solution processing."*

From studying these four units, we have come upon the notion that there is no such thing as a "final" product of R&D. Rather from any one R&D project may emanate a chain of knowledge products somewhat analoguous to the food processing chain; following such an analogy we can imagine a project as acquiring and creating various elements of knowledge just as plants and livestock acquire various minerals and proteins in the process of growing. The total "product" in its fully grown form is rarely directly edible but must be cut up, processed, refined, blended with other products, and repackaged even before it reaches its "ultimate destination," the consumer. However, even the consumer must then prepare it, cook it, and serve it. Once received at the mouth, the food then goes through another elaborate transformation in which it is shredded and decomposed into separate mineral and protein elements to be "finally" absorbed into the blood. It is very important, in our opinion, for D&U units to develop a similar conception and appreciation of the complexities of knowledge transformations. Each of the units studied has struggled mightily, indeed devoted most of their energies to the transformation problem, *and rightly so*. What may be lacking, however, is an overall conception of the pattern of necessary and desirable transformations.

"Necessary" and "desirable" are extremely important words to keep in mind and to keep separate in viewing the transformation problem. Because the number of transformations is potentially so vast, the D&U unit must have clearly in mind what constitute the minimal necessary transformations for which they are responsible and for which they can reasonably be *held* responsible. This usually seems to include *some* screening for quality *some* collection, *some* summarization, *some* indexing, and *some* tailoring for specific users. Hopefully, many of these tasks will be undertaken as a matter of course by other units or by the researchers, themselves. Summarization, for example is usually a routine aspect of report writing although we find many D&U units being forced to rewrite or substitute new summaries in new formats. Nevertheless, the federal D&U unit under the best conditions should function primarily as a watchdog on the transformation process, monitoring and surveying the transformation chain at critical points, and assisting, encouraging, and coordinating transformations done by others.

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*This summary from Chapter IV applies to the next three sections, "Transformation," "Transmission," and "User Helping."

On the other hand, there are some audiences which many D&U agencies feel are extremely high priority for one reason or another. These are usually policy makers within the larger agency who have some degree of authority and policy control over the D&U unit, itself. In these cases some of the units attempt to provide highly tailored, summarized and packaged information capsules under the label of "R&D briefs." It seems clear that most D&U units will continue to serve this highly targetted and specialized information-handling task in addition to their broader function of serving the practitioner community as a whole.

After reviewing the many different types of information transformation activity performed by the four different agencies, we would propose four activities of particular importance to the Manpower D&U unit, but of general importance in providing D&U services.

1. A Comprehensive Resource Information Center and Library Service [Improvement Option #13]

Only one of the four units studied, the NCEC, has attempted to create a comprehensive one-stop R&D information center and service system (ERIC). While this system has many problems and has been expensive to set up, it does provide the necessary minimum collection and indexing activity upon which many other transformation activities can be built.

In our view the D&U unit must insure that comprehensive cumulative collection and storage of all relevant knowledge takes place and should require all other information products to take adequate cognizance of this knowledge storehouse. Increasingly in years to come, users will expect and require information products to be built on a foundation consisting of all existing knowledge in a given field, not merely a partisan, partial, or happenstance sub-selection thereof. There is no way to provide such a base without centralizing the responsibility for collection and collation of the knowledge. It would appear that the manpower field is in special need of such a service.

Because of the ERIC experience of nearly a decade, it should now be possible to design a new system for Manpower which provides the advantages of ERIC without many of its shortcomings. For example, it seems quite feasible to let a contract for the clearinghouse function either to a university or to a professional association. On the other hand, it is important to include in the facility information sources such as journals and books which contain relevant and important R&D information which may not have originated with either Manpower research projects specifically or even U.S. government sponsored programs. It is also probably advisable at this point to provide such a center with a minimum of gadgetry for microforming or computer processing since very few users are oriented toward such devices in spite of their apparent cost and/or time cutting features.

One major unknown in the clearinghouse picture is the potential future role of NTIS as the super-centralized government clearinghouse for all federally-sponsored R&D. If NTIS can prove itself as the most efficient storage-retrieval mechanism for government reports, it certainly should be so utilized, but it will not take the place of a comprehensive information center to service a specialized field, particularly one such as Manpower which depends much more heavily on the social than the natural sciences.

2. High Quality State-of-the-Art Summaries [Improvement Option #14]

It is hard to over-estimate the value of a well-written, carefully prepared, integrative review and analysis of the research in a given field. Such works, when they appear, can become the focus of new thinking and the basis for more coherent presentations of the body of knowledge represented not only to students and other researchers but also to practitioners, policy makers, and the general public as well. In the few cases where such integrative summaries have been sponsored by a D&U unit and where an outstanding writer has been found, the pay-off has appeared to be very high.

Admittedly, it will not be easy for a D&U unit to serve up such reviews on demand or even on a regular or routine basis. Nevertheless, a reserve fund could be set up which could be used whenever the right man for the right topic came into sight.

State-of-the-art review projects should be offered with reasonably generous budgets to allow the individual scholar to hire a small staff of research assistants and to devote all or most of his own time for a period of at least 3 months. In return all projects should be required to include manual and computer searches of obvious bibliographic sources including NTIS and the clearinghouses responsible for the subject domain.

Once such state-of-the-art documents are completed, and provided they measure up to the standard of quality desired, there should then be provision made not only for wide dissemination but also for further transformations into summary briefs for policy makers, handbooks for practitioners, feature stories for the mass media, etc. The importance of state-of-the-art analyses for policy makers in particular should not be underrated. Too often effective communication upward is seen as providing fresh nuggets of fact from *current research projects*. Yet a concise statement which provides an *entire field of research* may actually be more helpful to the policy maker, may provide him with a context within which to understand and evaluate the "nuggets" and may even serve to reorient his thinking on the topic as a whole. Some indication of the extent of the review activity underlying these summaries should also lend them special credibility.

3. High Quality Policy Briefs [Improvement Option #15]

Responses to the survey question, "What is the most effective way to insure that the knowledge produced by research actually gets put into use?" frequently cited the need for highly processed, summarized, and targetted briefs based on research reports but clearly spelling out practice or policy implications. While such pre-digestion is optimally desirable for all good reports and all audiences, it is not within the practical capability of any D&U agency we are aware of. However, each such agency usually has one audience which is highest priority and this will usually be the policy making or planning groups in the parent agency.

Well-done policy briefs are almost always welcomed and seem to fit an important need, but there are some pitfalls. First of all, they must be *well written* and thus may require the nearly full-time talents of a skilled staff writer. Second, they may tend to exaggerate the importance of one particular study out of a whole research program (see again point made in previous section about "nuggets"). Hence, if the findings are surprising or have high "gee whiz" value as attention grabbers for the policy people, they may fly in the face of a larger weight of (duller) research evidence.

The process of policy brief development is, in itself, a microcosm of the entire knowledge transformation process; hence it is an important process to analyze meticulously and to use as a means of training and sensitizing professionals to many key D&U issues, particularly the very important and usually under-rated act of deriving practical implications.*

4. Development of Transformation Checklists [Improvement Option #16]

In spite of much activity in the transformation area, none of the four agencies studied has a coherent policy for determining what transformations are to be undertaken and how they are to be evaluated. One step in this direction might be the simple act of monitoring and accounting what is done over the period of a year in a number of categories of transformation. In Chapter Four we identified six transformation categories (basic writing, summarizing, collection-synthesis, tailoring, interpretation, and screening) which could serve as a starting point. From reviewing our findings, however, we can propose a more complete listing of possible transformation sub-functions which could serve as a kind of checklist. Items for such a list might include the following:

(1) Translation
(2) Differentiation
(3) Integration
(4) Collection
(5) Simplification
(6) Amplification
(7) Recomposition
(8) Summarization
(9) Labelling
(10) Embellishing
(11) Targetting and Tailoring
(12) Redundancy cutting
(13) Redundancy building
(14) Consensual validation
(15) Screening
(16) Print-print referencing
(17) Print-person referencing
(18) Indexing

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*See "Operational Mode #5" described in Chapter One for one pattern by which this activity could be organized routinely.

Each of these items deserves some brief comment.

(1) *Translation:* This could refer merely to taking from one language and putting in another, but more broadly and importantly it refers to the task of removing technical terms or terms unfamiliar to the probable audience and replacing them with familiar terms. Often what is called "jargon" is merely the specialized language of one audience, useful and important for internal communication among a group of specialists. Nevertheless, the same words which would assist communication among the in-group, may block communication across groups. It does not always follow, however, that strange words should be eliminated. There may be times when a new word is necessary to introduce and stand for a new concept. It may also be true, on occasion, that a few new words add to the sense of novelty and interest-value to a sophisticated audience. The question for the translator, therefore, is how much is too much for the intended audience.

(2) *Differentiation:* Sometimes a piece of writing in its original form will be too massive and unapproachable for many readers until it is broken down into segments that make sense as units within the whole. Most report writers at least have enough concern for readers to segment their material into "chapters," but this may not be enough for many readers. Any work should be seen as a whole constructed of separate but logically related parts. Clearly identifying the parts allows the reader to enter the material in more places, choosing his starting point at familiar, novel, or otherwise salient segments.

Another aspect of differentiation is showing or explaining how and why a particular piece of work is different from other work or past work that may seem very similar to many readers. This type of differentiating allows the busy reader to decide whether or not the new item will add enough new knowledge to be worth the time and trouble of reading.

(3) *Integration:* Material may be quite well differentiated and unitized but the elements may not be coherently related to one another. A common communication error of scholars is assuming that readers can make their own connections mentally the same way that they can. In fact, making such connections explicit is an important aspect of good communication between researchers and practitioners.

(4) *Collection:* As noted in Chapter Four, simply bringing items of knowledge from different sources together is an important transformation function which is recognized by most units. Special collections clustered and keyed to practitioners' needs, concerns, and terminology are probably the most relevant types of collection activity for a D&U unit, and may have to be carried on in addition to and parallel to the massive and centralized archiving of knowledge by an agency such as NTIS.

(5) *Simplification:* In addition to removing strange technical terms in translation, it may sometimes be necessary to reduce a complex and sophisticated analysis to something that is comprehensible to the layman. Metaphor is a most common vehicle for this (as, for example, in our food processing chain analogy for the transformation chain earlier in this section). Scholars are fearful of distortion and misrepresentation in this process and are often very reluctant to engage in attempts to simplify things that seem perfectly simple and obvious to themselves already. Hence, the task often falls to journalists or non-specialists who may be more prone to make the very errors that scholars fear.

(6) *Amplification:* While outsiders may often get the impression that scholars are excessively verbose and encumbered by an excess baggage of elaborate terminology, the reverse may be the problem for cross-disciplinary communication. Scientific communication within a discipline, when it is working well, takes place in a kind of short-hand in which a single word may stand for a whole cluster of concepts well understood by the communicator and the special audience of colleagues that he comes about the most. Hence, external communication may require adding many paragraphs of explanation, background filling, and context setting for the non-initiated.

(7) *Recomposition:* Report writers do not always put material together in ways that assist the reader in access and in building involvement. Order effects are extremely important in cross-discipline communication; the first chapter, for example, should always include both a summary and a sampling of the the most interesting findings if the writer really wants the reader to go on beyond it. Recomposition may not involve any rewriting at all; merely a reordering of sections and the relegation of some things to appendices can have a salutary affect. The original writer is not always the best judge of what should go where for optimal readability.

(8) *Summarization:* This point is well-covered in Chapter 4, Section 4.12.

(9) *Labelling:* Related to item #2 above is the need for adequate and accurate labelling of sections or elements of reports so that busy readers will get some impression from rapid scanning without being misled. Even a one-word heading is a summary and it is rarely true that every sentence in a report is of equal value and interest to all readers. Hence, good headline writing is a crucial type of transformation.

(10) *Embellishing:* Research reports can be unpalatable for a variety of reasons, not the least of which is dryness and abstractness of style. Often the aspects of a study most likely to arouse and sustain reader interest are the verbatim statements of respondents or descriptions of actual situations which the researcher relegates to his files, having collated, tabulated and abstracted the essential factual content. Human interest anecdotes may add nothing whatever to the validity or substance of a report but they can be crucial for broader communication particularly to the public, to congressional committees, etc.

Examples from the data with verbatim statements and/or photographs represent one form of embellishment that is relatively harmless and beneficial. Another form rarely indulged by researchers is *humor*. Often a point can be punctuated with a joke or a cartoon without too much distraction.

Finally embellishment may also come by tying in a finding with a specific example or situation drawn not necessarily from the research data but from everyday experience familiar to the particular audience. This is probably the most important form of embellishment and can only be done by someone very familiar both with the research and with the circumstances of the audience in question.

(11) *Targetting and Tailoring:* With the last point above we move to the very important matter of deriving special implications for action for users in particular situations. At the most specific level it is difficult and perhaps even irresponsible to suggest actions based on research without personal discussions with the particular users about the particular problems they face (a "user helping" activity within the schema of Chapter 4). Nevertheless a considerable amount of interpretive work can be undertaken as illustrated in Chapter 4, Sections 4.14 and 4.15. We would stress the potentially *high cost* of this activity and therefore the importance of three guidelines: (a) tailor only for clearly defined highest priority audiences; (b) when tailoring is done make sure it is done well by someone with demonstrated writing skills; and (c) train researchers and practitioners to do their own tailoring.

(12) *Redundancy Cutting*
and
(13) *Redundancy Building:* Complaints about over-long reports often center on the question of redundancy, either that a report says the same thing over and over again or says the same thing as another report. Such redundancies no doubt call for cutting and perhaps even shelving certain reports without dissemination. On the other hand *redundancy as such* is a necessary feature of both scientific inquiry and effective communication. It is important for basic knowledge building that important findings be confirmed by different investigators using similar and different methodologies. Hence a new study which confirms findings from prior research may be important unless it is another of many to show essentially the same thing.

The very terseness of a report may sometimes hinder effective transfers simply because fast busy readers will miss or underrate important points which are stated only once. Important points also need to be stated and restated in different words with or without embellishments to increase the probability that they will fit the idiosyncratic reading styles and tastes of a predictably broad range of readers.

The essential point here is determining and writing for just that degree of redundancy necessary to clarify the message over the "noise" of jargon and dissimilar interests and situations, and no more.

(14) *Consensual Validation:* On rare occasions the credibility of a report can be enhanced by obtaining judgments from experts, representative readers, or VIP's of various sorts and reporting these judgments as a kind of endorsement. Such a procedure might of course militate against controversial reports which produce surprising findings, but this depends on the type of judgment called for, e.g., a panel of methodologists might merely affirm that the procedure followed confirmed to the highest standards of scientific method. The National Center for Educational Communication in effect followed such a procedure in the Educational Testing Service project evaluating R&D products of labs and centers.

(15) *Screening:* This topic is adequately discussed under Chapter 4, Section 4.16. Each of the four D&U units studied has attempted some form of screening for quality and/or relevance. Until very recent times the stringency of screening has increased as a function of the increasing volume of material produced on a given topic; one important aspect of the information handling technology introduced by ERIC, however, is that it allows an enormous volume of input into the system without much screening by anyone but the user. This means user self-screening for relevance can be extremely high (provided there is a good thesaurus and he knows how to use it), but the scientific quality question is by-passed. Such a system might well serve the needs of practitioners better than scholars.

(16) *Print-Print Referencing:* Usually academic researchers are rather good about making reference to past work by others but not all researchers are good at this and developers and applied researchers in non-university settings (where publication rewards are less) are generally rather poor at it. Compounding the problem is the government R&D monitor's reticence because in most cases he is not himself thoroughly versed in the literature and is reluctant to reveal his own ignorance. Nevertheless, print-to-print referencing is very important in building a sound fabric of knowledge and allowing highly interested readers to pursue an area to the maximum depth possible.

(17) *Print-Person Referencing* may occur automatically alongside print-to-print but useful references can also be made to people working in a given area, particularly with current projects where no reports are yet available but where a reader can be linked to a valuable resource person. The contract monitor is often in the very best position to know who such persons are and should take every opportunity to bring R&D works together and to get them to cite each other. This is how communication networks come into being.

(18) *Indexing:* Finally, we find a deplorable number of government reports which lack indexes and are thus totally inaccessible to the reader searching for specific information beyond that contained in the title or abstract.* We can find no suitable explanation for this lapse except that it may signify the lack of importance that the researcher places on a report as distinct from a published book. The fact remains that an unindexed book demands of the user either that he scan the table of contents with hope, that he read the entire contents, or that he not read at all and hope that nothing on his topic was said.

It seems entirely appropriate that important reports be tagged as requiring indexing either as part of the cost of production or as a separate action supported after screening. This would also be a necessary first step toward a truly comprehensive information retrieval system for a topic area.

5. Decision and Product Archiving

Transformation is hard work. Many decisions (for example, the best way to tailor for an audience) or comments of clients or staff must be saved as a reference for future similar situations. (This point also applies to transmissions.)

E. TRANSMISSIONS

We were surprised to find that among our four D&U units much more effort and resources seemed to be invested in transformations than in transmissions, but this circumstance arose from different factors in different agencies. In NIMH, for example, private sector professional channels are considered to be quite good, supported by an extensive network of professional journals and conferences with interdisciplinary overlapping memberships. In education both professional and commercial channels are relied upon but are recognized as inadequate, hence the creation of ERIC and more recently the pilot phase of an extension service based in state education agencies. In Manpower the problem seems to be different, however; the professional networks are somewhat weaker and more diffuse than in either education or mental health, and may not be the best vehicle for reaching state and local agency personnel for whom material has the highest practical relevance. At the same time direct access to these users by the D&U unit is apparently inhibited by their status within the bureaucratic structure of the Manpower Administration and by norms of non-interference at the state level. We believe that these problems are not insurmountable, however, and would propose five steps in that direction.

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*Even a highly rated report such as Breakthrough for Disadvantaged Youth lacks an index as does the prestigious Manpower Report of the President.

1. Maximize R&D Input to Existing Organs [Improvement Option #17]

At least two very fine dissemination channels already exist in the Manpower Administration in the form of the monthly magazine Manpower and the annual Manpower Report of the President. These publications are available to and received by a large proportion of relevant manpower users, particularly at the federal level. Therefore as a first guideline to transmission policy, the D&U unit should make every effort to increase R&D input to these organs and to insure that such input is high quality with high reader appeal and with action implications as clearly spelled out as possible.

To greatly increase R&D input to these organs it may also be necessary to improve internal interpersonal linkages between the responsible editors and other ORD staff involved in project monitoring. Assuming a very close collaboration relationship, it may also be possible to use one or the other of these publications as part of experimental diffusion efforts with follow-up and more specific counselling on utilization with various users.

2. A Daily Newsletter for Policy Makers and Administrators [Improvement Option #18]

Some years ago a number of the MA staff initiated a daily newssheet consisting of xeroxed newspaper clippings of items of special interest. Although the newsheet was popular and widely read it fell into disuse in recent years. For a variety of reasons it would appear to be desirable to revive this idea, casting it in a slightly different form and greatly increasing R&D inputs in addition to news items from other sources.

It is a well-known fact that newspapers are a primary medium for receiving information on a daily basis for all government officials and representatives from the President on down. It is therefore worth considering how important aspects of the newspaper as a dissemination device could be incorporated into a special organ of the Manpower D&U unit. Four aspects stand out: regularity, brevity, scanability, and variety.

(a) *Regularity:* Channels must be used regularly to be really effective; they must build and maintain the *habit of use* in the audience. For this reason, a daily sheet is probably more effective than a weekly or a monthly sheet.

(b) *Brevity:* Almost as a corollary to (1), a newsheet cannot entail much time to read or to prepare. It should not interfere too much with the routine work patterns of busy administrators and it cannot place too great a burden on D&U staffers at least until it proves itself as a valuable addition to the program.

(c) *Scanability:* The entire contents of the newsheet should be easily scanable in less than two minutes, and to this end should be carefully and clearly headlined very much like a newspaper.

(d) *Variety:* To appeal to a variety of reader interests and needs the newsheet should include news notes from a variety of sources broadly relevant to manpower issues, always including some R&D content but rarely if ever exclusively.

Whereas the newsheet might be similar to a newspaper in many ways it ought to be different in others, particularly if the goals of the D&U unit go beyond mere transmission of information. First of all, all R&D inputs should be clearly referenced with information included on access and acquisition. In fact, for selected high priority users, each issue of the newsheet should include some sort of order blank which serves to (1) makes access to detailed information easier and faster, and (2) implants the idea that further pursuit of a topic might sometimes be appropriate as well as possible.

3. Fast Turn-Around Reference Service for Policy Makers [Improvement Option #19

While the newsheet would have high value as a transmission medium to policy makers, it would not alone be sufficient to improve D&U services to that audience. In addition, we would propose a rapid response personalized search and retrieval service for selected persons at high levels, or to a few users at various times on an experimental basis. Each such user should be thoroughly briefed on the purpose and capability of the service, and his information needs carefully and individually profiled in detail. This concept has been elaborated in two rather different ways as Operational Modes #4 and 5 in Chapter One.

4. Farm Out the Dissemination-to-Research and Dissemination-to-Practice Functions [Improvement Option #20]

For a variety of reasons it is probably advisable to decentralize or at least de-federalize most dissemination and network building functions, leaving the D&U unit in the role of a supporter, coordinator, and in some sense, a monitor. This has been done rather successfully by NCEC in the ERIC system. Interviews with the staff librarian in the Manpower D&U unit indicate that a large proportion of requests for reports come from university sources; while such servicing of the academic community may be important, it could probably be done more efficiently under contract to an ERIC-type clearinghouse as well as through referral to NTIS.

The main reason for such a shift would be to allow concentration of staff resources on highest priority and highest proximity users, especially in policy and planning, and to permit experimental attempts to provide intensive highly-targetted and use-centered experimental dissemination projects.

5. Tie into and Strengthen Existing Knowledge Networks [Improvement Option #21]

The purpose of the above shift in D&U policy would not be to deemphasize or downgrade the importance of D&U for practitioners but rather to improve it, particularly in light of the current pattern of communication suggested in the "network" Figures on pages 5-9 and 5-10.

What appears to be a most promising approach is the so-called strategy of "utilization by subversion" already practiced to a limited extent by the Manpower D&U unit. Existing networks, professional association meetings, and journals should be encouraged and supported through continuing contracts to translate, interpret, and disseminate R&D findings.

Of special importance might be the support of a professional association to begin an annual series of conferences with published proceedings on a topic of special and continuing importance to manpower workers. Such a conference series should be deliberately planned to include participation by practitioners and government officials as well as university and private sector researchers and developers. Such annual events can be designed to act synergistically in serving many purposes through combining many kinds of input, formal and informal, print and personal. They can focus publicity and concern on a topic, build an interdisciplinary researcher-and-practitioner network, assist in summarizing and synthesizing existing knowledge, and provide important motivational and intellectual stimulation for further work on sub-topics of highest priority and interest.

F. USER-HELPING

While transmission priorities, means, and costs are reasonably clear and calculable, the same is by no means true for the more challenging and ultimately more important function of user helping. We find all four D&U units groping for new and creative directions in this area, and our current survey does not reveal too many imaginative strategies that are clearly to be recommended. In essence, we feel that more basic knowledge should be generated regarding knowledge utilization activity at a very concrete behavioral level. As a corollary to this, attempts to provide user helping services should be designed as experiments so that we can learn with more certainty what works and what doesn't work, and what benefits can be achieved for what costs.

1. D&U Specialists [Improvement Option #22]

Both SRS and OE have conducted pilot projects to recruit, train, and install research utilization specialists in state agencies. Both projects showed some promise, showed that it could be done, showed that agents performed useful services for some clients and could survive for a period of time with federal support without having these functions subverted by other forces and priorities acting within the state bureaucracy. The reports on the experience to date leave unanswered two questions of highest importance: (1) can an agent provide personalized user help to enough people to have an impact proportional to his cost? and (2) can an agent survive over the long haul still maintaining his linker role with or without continuing federal support?

Thorough evaluations of both the SRS and NCEC extension agent projects are now underway and may provide satisfactory answers to these questions. The SRS agents are being evaluated by Edward Glaser Associates, and the NCEC agents are being evaluated in the National Institute of Education contract with Stanford University which stresses cost and quantitative benefit factors. Results of both these studies should be awaited and examined closely before major new initiatives are undertaken in this area.

2. Adapt or Redevelop RU Manuals [Improvement Option #23]

Both NCEC and NIMH have developed research utilization manuals and handbooks of various sorts, and these have been acclaimed by many users. If such manuals are effective, they represent in some sense a very low cost alternative to the creation and installation of RU specialists. Yet there are no equivalent products available in the manpower field to provide this specific kind of information. With a small investment, existing manuals from education, mental health, or elsewhere could be adopted with the inclusion of case examples specifically relevant to typical manpower problems. There may also be RU factors unique to the manpower area which would require more extensive redevelopment or targetting of such manuals.

3. Changing Attitudes Toward Research Utilization by Practitioners [Improvement Option #24]

Part of the utilization problem may be motivational; potential users may never have had successful experiences either in personal encounters with researchers or in attempts to read, interpret, and apply information from research reports. Attitudes can be changed, however, through demonstration of applications to practical everyday situations as well as by constant reminders and suggestions on the value and relevance of research supported by convincing real-life examples. One element that often seems lacking perhaps particularly in the Manpower field is the belief on the part of the practitioner that R&D is relevant to him and worth the effort it takes to read and derive his own action implications.

4. Training in RU for Practitioners [Improvement Option #25]

Related to the previous point is the need for widespread training in specific RU skills such as defining needs and objectives, identifying and retrieving relevant research, evaluation and interpretation of research, deriving implications for alternative actions, and designing, trying out, and evaluating changes based on research implications. Some program packages for such training are available in education* and could probably be adapted for use with manpower professionals. Manuals such as those mentioned earlier can also be used as a basis for such training.

5. RU Services in Crisis Situations [Improvement Option #26]

The surveys reported in Chapter Five include replies to a question concerning information use in crisis situations. A principal finding is that research information is rarely sought in such situations, a sad reflection on current levels of research utilization. It would seem appropriate, therefore, to initiate in depth analyses of crises within the agency and for practitioners, followed by some specialized services on a trail-experimental basis to reach out to users in crisis to assist them in retrieving pieces of research very relevant to their needs, to further assist in deriving implications, planning implementation, etc. Such services could be provided on a "hot line" arrangement, perhaps similar to one now in use in the Congressional Research Service of the Library of Congress. Such a service would require a good deal of preparation including a prior assessment of the kinds of questions most likely to be asked and the kinds of crises most likely to be faced.

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*For example, Charles Jung's Resource Utilizing and Problem-Solving (RUPS), a process training package for teachers, Northwest Regional Educational Laboratory, Portland, Oregon, 1970.

Chapter Five showed that informational crises in the agencies often involved requests from high policy makers or Congress. An "on-call" service geared to making available R&D information in these situations (through retrieval systems and/or experts) might be developed and tested to help in such crises.

Each call for help and its consequent service giving and receiving activity should also be carefully documented, probably by a third party both to rate the adequacy and value of the service provided and to understand more clearly how such a service can be organized for maximum performance. In this way we might get a better understanding of the dynamics of user helping and assess the extent to which the D&U agency must reach out to help the user over and beyond what the user can do for himself.

G. MICROSYSTEM BUILDING

> "Microsystem building refers to activities in which many elements of the problem-solving dialogue are simultaneously present and are allowed to interact on a small scale. Maximal D&U functions in this area would include interchanges between researchers or developers and users, user-collaborative R&D, and integrated RDD&U programs."

Evaluate Effectiveness of Past and Present Microsystem Projects [Improvement Option #27]

A sophisticated knowledge flow system will include some activities in which many elements of the problem-solving dialogue are simultaneously present and are allowed to interact on a small scale. The importance of this point is underscored by the high overall use of interpersonal media within all groups (and between, in many cases) in the data from the pilot surveys (see Chapter Five). We are of the opinion that a great deal of microsystem building must go on as part of an overall program to improve D&U and to create a national problem-solving system. However, we must say this as a matter of faith and logic rather than proven assumption. One attraction of microsystem activities is that they are intrinsically satisfying *to those involved* and their benefits for such persons are not too difficult to assess. Yet the primary rationale of microsystem building in our view lies in its secondary or spin-off effects, e.g., (1) as a demonstration of how macrosystem D&U can take place, (2) as a training experience for researchers and/or practitioners which they can use subsequently themselves and pass on to others, and (3) as a way to build knowledge which is highly relevant for certain types of users and which hence can be disseminated broadly through transmission activities of the D&U unit.

Yet these spin-off activities have been difficult to measure and therefore the true value and cost-effectiveness of microsystem building have been hard to demonstrate. For this reason we feel that the priority here now is evaluation of past and existing efforts with emphasis on *development of a suitable methodology for continuing evaluation*.

H. MACROSYSTEM BUILDING

> "Although most macrosystem building functions lie outside the domain of any particular unit within an agency, several processes can be identified as maximal D&U activities in this area: modelling of the macrosystem, monitoring of the macrosystem, promoting linkage, filling recognized gaps, and building system awareness."

The role of government in the U.S. is generally not to do research or service directly but to hover over the complex of institutional forms which provide service and perform social problem-solving, attempting to serve and represent the general public and the general good by "coordinating" separate efforts. Government should see to it that R&D communities and service professions work together with users so that they collectively function as a problem-solving system to the benefit of the society.

The agencies of government can work to shape and reshape the macrosystem in various ways, e.g., through exerting direct control on certain individuals and subsystems via legal sanctions, rules and regulations, through protection of other individuals and subsystems, through financial support and subsidy of various subsystems, and through creation of new roles, institutions, and other facilitating mechanisms to fill recognized gaps and to help the total system function more effectively and beneficially.

1. Monitoring [Improvement Option #28]

A major outcome of this project has been the development of a framework and a set of procedures for definition and analysis of problem-solving macrosystems and the role of federal D&U units within them. An important next step would be to begin efforts at monitoring the macrosystem based on this schema or some other. Confusion and ambiguity about the scope and function of D&U units abounds. There is a need to set activities in context, in relation to one another, and to consider them in proportion to one another as parts of a logically interrelated whole.

One might ask where responsibility for such monitoring properly resides. It can be argued that all macrosystem factors belong at a level above the typical D&U unit. We agree that this is true for the most part *provided someone in the system recognizes their responsibilities in this regard!* The D&U unit, however, has a special mission in examining *the flow of communication* especially for R&D information but not exclusively, since through the labyrinth of transformations and transmissions what is ultimately R&D and what not is seldom clear. Having such a mission puts the D&U unit in a legitimate position to monitor the functioning of the total system on what might be perceived as a fairly neutral and non-threatening theme, the flow of R&D needs and findings.

2. Creating a Centralized R&D Storage-Retrieval System [Improvement Option #29]

Only one of the four agencies studied has attempted to do this in a thorough-going way (NCEC's ERIC). For the other three such a system is probably beyond their means and may not be called for because of the much smaller volume of research which is handled. As stated earlier under "transformations," we feel that some such centralized library storage and cataloguing mechanism is necessary as a basis for many other types of transformations as well as to provide a competent and comprehensive response to user requests. In view of the costs and uncertainties, however, it would seem desirable not to duplicate mechanisms that already exist elsewhere and therefore to piggyback when possible either on NTIS or on ERIC or both. However, although there is a general trend in the federal government toward using NTIS as a central depository, the actual operations and capability of that facility should be examined critically. Because NTIS functions are paid for by users, some types of report dissemination will be greatly inhibited unless ways are found to subsidize the search activities of these users (subsidy experiments might themselves be of great interest to D&U units in examining and finding ways to increase RU behavior). Other problems may arise from attempting to use a mechanism designed for technical hard science information for codifying and handling social science information.

A cataloguing and retrieval system which could contain both R&D and the now better-used data on performance/description of manpower could provide a focal point and link to both kinds of output; for example, a policy maker might request latest unemployment statistics from the system, and get back this plus a summary on the latest research.

3. Building an Extension Service [Improvement Option #30]

There is no question that the most successful RU system to date has been the U.S. Cooperative Extension Service servicing agricultural producers. Does such a system make sense outside of agriculture and, if it does, can it be developed with the kinds of resources likely to be available in the next few years? The answers to both questions are being sought in two studies now in progress and mentioned previously in this Chapter, and as we indicated we recommend that new actions in this direction should await their findings. However, on the basis of what we know now I think we can guess at partial answers which are a qualified "yes" to applicability and "no" to cost. If this is so, it would seem most imprudent to begin building a system on a shoestring and then to expect of it the same kind of results delivered by far more lavishly supported efforts.

II. SUMMARY

This chapter has contained a large number of suggestions and ideas about how to improve D&U systems with special reference to the Manpower Administration but with some applicability to all systems. In a real sense, however, the task of deriving such action implications should not and cannot be left to the research investigator alone. In the first place, research tends to describe "*what is*" better than it describes "*what might be*"; there is no guarantee of creative new ideas even in the highest quality research products. Secondly, deriving such implications should be a joint activity involving the policy maker, the administrator, and the practitioner at least as much and probably more than the researcher. Methods for bringing about such interchanges are sorely needed, particularly methods which encourage creative thought on the one hand and responsibility to the needs of the situation on the other. We had hoped to create such constructive brainstorming discussions in the interface conferences but were not very successful for reasons not altogether clear to us. Many suggestions have also come from interviews and questionnaire responses, and wherever appropriate we have tried to include them in our recommendations.

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APPENDIX A

Center for Research on Utilization of Scientific Knowledge
Institute for Social Research
The University of Michigan
Ann Arbor, Michigan

KNOWLEDGE COMMUNICATION AND UTILIZATION: An Exploratory Study

A. Description of Primary Professional Roles, Functions, or Duties

As a context for considering the questions which follow, we would like you to identify yourself in terms of the organization you belong to and the work you do. Since you probably do many more things than can be listed in the space provided below, indicate only those aspects of your job which are most salient to you.

1. What are your major work activities?

____

____

____

____

2. Please check the group below which most closely identifies your job. (If more than one applies, pick the one on which you spend the greatest amount of time.)

Federal

______ a. Federal policy and planning staff
______ b. Federal research administration staff
______ c. Federal program administration staff
______ d. Federal dissemination and utilization staff
______ e. Federal regional office staff

Non-Federal Agencies

______ f. State agency administrative or service personnel
______ g. State agency research, demonstration, or dissemination personnel
______ h. Local public agency administrative or service personnel (e.g., city or county vocational rehabilitation centers, mayor's office, etc.)
______ i. Local public agency research, demonstration, or dissemination personnel
______ j. Private agency service personnel
______ k. Private agency basic or applied research staff
______ l. Private agency demonstration, dissemination, or utilization staff
______ m. University/college basic or applied research staff
______ n. University/college demonstration, development, dissemination, or utilization staff
______ o. None of the above categories applies to my work role. I would I would suggest the following category instead: ______________

____

B. Linkages with Other Groups

In this section we are concerned with the important contacts you have with other groups. We will begin with the contacts in which you receive information from other groups, and later will cover those contacts in which you send information to other groups.

1. Select the two groups (excluding your own) from whom you receive the most important information. For both of these groups, answer the following sets of questions.

1.1 FIRST GROUP (Important information received):

a. Briefly identify the person, group, or organization outside your own group from whom you receive the most important information. If a person, indicate organization and role. ______________________________

____

b. Referring to the list on page 1, enter the letter designation (a-n) of the group which most closely corresponds to the person or group you have identified in "a" above. ________

c. How frequently do you receive information from members of this group? (Circle one.)

1	2	3	4	5
once a year	every few months	at least once a month	at least once a week	at least once a day

d. How do you typically get information from members of this group? (Choose a maximum of three ways, ranking them with a 1 for the most frequently used way, 2 for the second, and 3 for the third.)

______ Conversation

______ Telephone

______ Correspondence or memos

______ Reports

______ Journals

______ Books

______ Conventions, professional meetings, conferences

______ Abstracts, summaries

______ Guidelines, procedure manuals

______ Other (specify): ______________

____

e. What type of information do you typically receive from members of this group? (e.g., research study, evaluation, model design, performance data, etc.) If possible, cite specific examples of the most typical information received.

____

____

f. How do you use this information in your work? (e.g., "to design new program"; "for use in budgeting", etc.)

____

____

1.2 SECOND GROUP (Important information received):

a. Briefly identify the person, group, or organization outside your own group from whom you receive the most important information. If a person, indicate organization and role. ______________________________

____

b. Referring to the list on page 1, enter the letter designation (a-n) of the group which most closely corresponds to the person or group you have identified in "a" above. ________

c. How frequently do you receive information from members of this group? (Circle one.)

1	2	3	4	5
once a year	every few months	at least once a month	at least once a week	at least once a day

d. How do you typically get information from members of this group? (Choose a maximum of three ways, ranking them with a 1 for the most frequently used way, 2 for the second, and 3 for the third.)

______ Conversation

______ Telephone

______ Correspondence or memos

______ Reports

______ Journals

______ Books

______ Conventions, professional meetings, conferences

______ Abstracts, summaries

______ Guidelines, procedure manuals

______ Other (specify): ______________

____

e. What type of information do you typically receive from members of this group? (e.g., research study, evaluation, model design, performance data, etc.) If possible, cite specific examples of the most typical information received.

____

____

f. How do you use this information in your work? (e.g., "to design new program"; "for use in budgeting", etc.)

____

____

B 2. Now we would like to switch our attention to those groups to whom you send information. Again, choose the two most important groups (excluding your own) to whom you send information.

2.1 FIRST GROUP (Important information sent):

a. Briefly identify the person, group, or organization outside your own group to whom you send the most important information. If a person, indicate organization and role. ____________________

____

b. Referring to the list on page 1, enter the letter designation (a-n) of the group which most closely corresponds to the person or group you have identified in "a" above. ______

c. How frequently do you send information to members of this group? (Circle one.)

1	2	3	4	5
once a year	every few months	at least once a month	at least once a week	at least once a day

d. How do you typically send information to members of this group? (Choose a maximum of three ways, ranking them with a 1 for the most frequently used way, 2 for the second, and 3 for the third.)

______Conversation

______Telephone

______Correspondence or memos

______Reports

______Journals

______Books

______Conventions, professional meetings, conferences

______Abstracts, summaries

______Guidelines, procedure manuals

______Other (specify):____________

____

e. What type of information do you typically send to members of this group?

____

____

f. To the best of your knowledge, for what purposes do members of this group typically use the information you send to them?

____

____

g. How do you determine how, or to what extent, they use the information you send to them?

____

____

2.2 SECOND GROUP (important information sent):

a. **Briefly identify the person, group, or organization outside your own** group to whom you send the most important information. If a person, indicate organization and role. ______________________________

____

b. Referring to the list on page 1, enter the letter designation (a-n) of the group which most closely corresponds to the person or group you have identified in "a" above. ______

c. How frequently do you send information to members of this group? (Circle one.)

1	2	3	4	5
once a year	every few months	at least once a month	at least once a week	at least once a day

d. How do you typically send information to members of this group? (Choose a maximum of three ways, ranking them with a 1 for the most frequently used way, 2 for the second, and 3 for the third.)

______Conversation

______Telephone

______Correspondence or memos

______Reports

______Journals

______Books

______Conventions, professional meetings, conferences

______Abstracts, summaries

______Guidelines, procedure manuals

______Other (specify): ______________

____

e. What type of information do you typically send to members of this group?

____

____

f. To the best of your knowledge, for what purposes do members of this group typically use the information you send to them?

____

____

g. How do you determine how, or to what extent, they use the information you send to them?

____

____

C. The Role of Information in Crisis Situations

Although our preceding questions have been concerned with "typical situations," we also are interested in what happens during the "crisis situations" which occur from time to time in most jobs. Since there may be no such thing as a "typical crisis," we would like you to think about the most recent situation you would describe as a crisis in your work.

1. What was the nature of this crisis? ________________________

2. To what extent did you need information from either within or outside of your work organization in order to deal with this crisis? (Circle the appropriate number for each.)

	To a small extent				To a large extent
internal information	1	2	3	4	5
information from outside	1	2	3	4	5

3. What specific types of information did you need in order to deal with this crisis?

4. From whom did you attempt to get this information? ________________________

   a. Were you successful in getting this information?

   ____Yes, completely ____Yes, in part ____No

   b. If your success in getting this information was less than complete, what were the problems you encountered?

5. Assuming such crises will reoccur in the future, what might be done to insure that needed information is available?

D. Information Needs

We would like you to consider your greatest unmet need for information.

1. **What type of information do you need that you are not getting? (e.g., research, evaluation, performance data, bibliographies, state-of-the-art studies, etc.)**

____

____

2. For what purpose do you need it? ________________________

____

____

3. From whom should this information come? ____________________

____

____

4. How (by what means) would you prefer to receive this information?

____

____

E. Opinions on Dissemination and Utilization

1. What do you think is the most effective way to insure that the knowledge produced by research actually gets put into use?

____

____

____

____

____

____

____

____

____

____

____

F. Dissemination-Utilization Process and Procedures

The statements below are derived from research and literature on dissemination and utilization (D&U). We would like you to rate the importance of each of these statements for the improvement of the D&U process generally. Having rated the importance of each item, we then would like you to consider how well such processes are presently handled in the area of human or social need which is most relevant to your work.

	In your opinion, how important is each of the following for the improvement of the D&U process generally?					To what extent are these presently exemplified in the D&U activities in the area of human or social need which is most relevant to your work?				
	Essential	Very important	Moderately important	Not too important	Not important at all	To very high degree	To high degree	To moderate degree	To slight degree	Not at all
1. Collaboration and cooperation between researchers and users to find and adapt what is useful.										
2. Preceding utilization efforts by a full cycle of research, development, and evaluation.										
3. Systematic planning of utilization activities.										
4. Selecting a competent staff to implement change.										
5. Starting out with adequate financial resources to do the job.										
6. Stressing self-help by those who are going to be the users of the research or change contemplated.										
7. Adequate diagnosis of the real user need.										
8. Involvement of informal leaders of opinion.										
9. Informal personal contacts with those who need to accept the change.										
10. Reciprocal feedback by both users and researchers.										
11. Adequate contacts by user with resource groups outside his own organization and reference group.										
12. Communication between levels in user organizations.										
13. Making sure users are clear about the purpose of the research and the ways it might be used.										
14. Careful organization of the planning and implementation efforts.										
15. Encouraging resource groups to help users revise, adapt or draw appropriate implications from research findings.										
16. Generating a willingness of users to change their behavior or listen to new ideas.										
17. Generating a feeling by users that the research findings would have high benefit for them in their work.										
18. Minimizing frustration and difficulty encountered by users trying to adopt or adapt research findings.										
19. Coordination and teamwork within the user system.										
20. A concerted campaign to put the research implications across.										

G. Background

1. Your job title: ____________________

2. Organization for which you work: ____________________

____

3. How long have you:

    a. had this job? ____________________

    b. worked in this organization? ____________________

4. Your age: __________

5. a. Years of education completed or highest degree obtained:

    ____

   b. Field in which most advanced degree earned:

    ____

APPENDIX B

ISR

CENTER FOR RESEARCH ON UTILIZATION OF SCIENTIFIC KNOWLEDGE / INSTITUTE FOR SOCIAL RESEARCH / THE UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN 48106

Our Center has undertaken an exploratory study of the ways in which new information is used in the day-to-day operations of government and non-government organizations. The study has been undertaken with the cooperation of four government agencies which sponsor a good deal of research and development (R&D) activity relevant to human and social needs.

These agencies are concerned that the research and development work which is done have some meaningful impact on program improvement and on solving significant problems in the areas of employment, education, rehabilitation, mental health, and the social welfare of citizens of different ages. I think we all share this concern, yet no one including the government has the certain knowledge of how R&D can be communicated and utilized most effectively.

This project represents a beginning inquiry along these lines; in the next few weeks we will be asking a small number of researchers, administrators, policy makers, and users how they now use new information in their working life. For this purpose, we have developed a form in which we have set down some rather basic questions about how people use information.

We asked the staff of the Division of R&D Utilization of the Manpower Administration to select a cluster of 15 people in each of several work roles representing important potential users or producers of knowledge. You have been nominated by them to be a participant in this study, and we would be very grateful for your help.

By this letter, we want to introduce you to what we are doing and to pose a few questions about your information using activities; after you have had a chance to think about these questions for a few days, we will send you a questionnaire form which focuses on these same question areas. I believe that the total process should be interesting and thought-provoking, and that you will see the outcome as something of value to yourself personally as well as to the field as a whole. At least we will strive to make it so, and we will welcome your suggestions of how to do this in a way that is most relevant and meaningful to you.

When all of the questionnaires are returned to us and the results tabulated, we will return the summary results* to everyone who is participating in the study and we will welcome further reactions from you at that time, also.

With your help I think we can make a start at unravelling the problem of knowledge "utilization". Please call me collect at (313) 764-2560 if you have any questions about the project and its objectives.

Sincerely yours,

Bonnie Ramirez
Project Coordinator

Project Co-Directors
Ronald G. Havelock
David A. Lingwood

BR:rw

Enclosures

---

*Your own individual responses will be regarded as strictly confidential.

ISR

CENTER FOR RESEARCH ON UTILIZATION OF SCIENTIFIC KNOWLEDGE / INSTITUTE FOR SOCIAL RESEARCH / THE UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN 48106

Enclosed you will find the questionnaire form we referred to in our letter of June 23, 1972. We have included a return envelope, self-addressed and stamped, for your convenience in mailing the form back to us.

Your replies will be held in strictest confidence, and you will not be identified in any way in our analysis. The identification number on the top of the questionnaire is only for our administrative use, and serves to save you the inconvenience of further mailings.

As we will be returning the summary results to all participants, we would suggest that you make a copy of your own reactions so you can compare them with those of other people in positions both similar to and different from your own.

We appreciate your participation in this study on knowledge dissemination and utilization and look forward to receiving your completed questionnaire form as soon as possible.

Sincerely yours,

Bonnie Ramirez
Project Coordinator

Project Co-Directors
Ronald G. Havelock
David A. Lingwood

BR:gh

Enclosures

ISR

CENTER FOR RESEARCH ON UTILIZATION OF SCIENTIFIC KNOWLEDGE / INSTITUTE FOR SOCIAL RESEARCH / THE UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN 48106

We have not yet had a response from you or your office since mailing out the form on knowledge communication and utilization about three weeks ago. We would very much appreciate your participation in the project and would like to make your task as easy as possible. Therefore, if you have encountered any difficulties, I hope you will not hesitate to call me collect at (313) 764-2560. In the event that this form has been misplaced, an additional copy is enclosed for your convenience.

Sincerely yours,

Bonnie Ramirez
Project Coordinator

Project Co-Directors
Ronald G. Havelock
David A. Lingwood

RGH:rw

Enclosures

Telegram (Night Letter)

WE HAVE NOT YET RECEIVED YOUR QUESTIONNAIRE RESPONSE TO THE KNOWLEDGE COMMUNICATION AND UTILIZATION SURVEY. WE STILL NEED YOUR PARTICIPATION TO INSURE VALID DATA AND WOULD LIKE TO HAVE YOUR RESPONSE AS SOON AS POSSIBLE. IF YOU HAVE ANY QUESTIONS OR NEED A NEW COPY OF THE QUESTIONNAIRE FORM PLEASE PHONE MRS. BONNIE RAMIREZ COLLECT AT (313) 764-2560.

RONALD G. HAVELOCK

APPENDIX C

A PROBLEM-SOLVING PACKAGE FOR DISSEMINATION AND UTILIZATION OF KNOWLEDGE

David A. Lingwood
Project Director
Center for Research on Utilization of Scientific Knowledge
Institute for Social Research
The University of Michigan

June 6, 1973

THE D&U MODEL PACKAGE

INTRODUCTION

This is an outline for a process of problem-solving in the area of the Havelock D&U model. It asks a system to develop an open, participative method of learning about its D&U activities, and gives action suggestions designed to turn system introspection into creative change.

We will begin with the prerequisites needed for the activity (which may take months in large systems--if, indeed, it can ever be finished). Next, you will be asked to answer many questions about your system. These are divided into six steps. The last (seventh) step involves putting your learnings to use -- all of the work which goes before is meaningless without this step.

THE SIX STEPS

You will be asked to work your way through a series of six steps derived from a model of the R&D-D&U process developed by Havelock (Havelock, 1972, and Havelock & Lingwood, in press). This is a model of the processes and functions involved in the production and utilization of scientific knowledge, rather than a model of structures. Thus, you will have to identify your own particular structures as they relate to the processes described.

We will ask several questions in each step, and give you hints on ways to go about developing answers. Take your time with each step, and don't short-cut to early solutions before you have gone through the whole process.

STEP "0" PREREQUISITES

You are about to begin an analysis of your R&D-D&U system which will require a great deal of hard work. You will need an extended period of time -- this task cannot be done in a meeting or two; you must be able to dig up information, bring to the surface and deal with opposing views, values and perspectives, and put it all into some usable framework. You will need support and participation of all levels of your system -- from highest policy maker to most remote client.

Frankly, if you don't think you can muster all of the prerequisites, then you probably shouldn't begin. If you can't see any chance for open sharing and work for change, then stop here.

Trust, openness and change capacity can be developed, however. As we go along we will suggest processes designed to ease this development. At the beginning you will probably need as much attention to how you are working as to the work products themselves. Frequent review of your processes (say at the end of each meeting) will be useful.

As you go along you will begin to see things to do, changes to be made, new roles, tasks, etc. You will have to have the ability (top level support, time, staff, money) to get this work started. Early failures may be overly discouraging to all involved. You might begin with changes you are sure have a high chance of succeeding. However, don't become overly dependent on such "incremental" progress -- a step at a time makes progress only if you are going in the right direction.

You will also need the skills and capacity to integrate all of the results obtained. This not only helps you see how the pieces fit together, but allows you to identify the key changes which will bring other problems under control.

STEP I: THE CLIENT SYSTEM

We will begin analyzing your D&U system with those who are the targets, recipients, or actual or potential users of the knowledge in it. The heart of the task at this point is comparison between what you think are the attitudes and behaviors in your client groups, and what they themselves think. Your "assignment" is to answer the questions below separately for each of your important client groups. You will begin by identifying who these clients are.

> SUGGESTED ACTION STEPS: Convene a group of people from your level to derive consensual answers to the questions below. At the same time, or immediately after you finish, bring together a group composed of teams from each of your client groups. Let them answer the same questions from their point of view. Next, get everyone together to compare results and work to understand (and build processes to solve) the differences in perceptions.

1.1 Who are your important clients (people or groups who get services or information from you)?

> PROCESS: Write the name of each client group at the top of a large sheet of paper, one sheet per client, then answer the questions below separately for each client group.

FOR EACH CLIENT GROUP:

1.2 How does this client sense his own needs for change (any kind -- that is, anything not being done now)?

1.3 At a general level, what are the most pressing present needs of this group?

1.4 More specifically, how do the group's needs break down among the following types of need?

1.41 -- new capabilities (funds, staff, support, mandate, freedom, etc.)

1.42 -- information (of any kind):

Within the information category, what are the needs for:

1.421 -- information based on research and/or development?

1.422 -- all other types of information?

1.43 Now, which are the "keystone" needs which must be met first? (Try to prioritize, or develop a logical flow of needs.)

1.5 How does this client currently make known his needs for each area above (i.e., 1.41, 1.421, 1.422).

YOUR EVALUATION

SUGGESTED ACTION STEPS: At the end of each section we will ask you to move away from the facts with which you have been dealing and give your attitudes, feelings, or evaluations about what has just been covered. Often these will be in the form of scales or other easily-scored items. We suggest you appoint someone to gather, score, and report back to you what you think. The same person or someone else should then lead a discussion on the results and their meaning. If you are working in groups (e.g., managers and clients) prepare the results so as to compare what each group feels. These steps should be used consistently as you finish each section.

You may find that, as you compare your work in the "fact gathering" and evaluation sections, you will want to move on to "OK, so what do we do about this?" This is natural, but it can lead to premature action plans since you will need the results from all steps in front of you to be able to do a complete job. So, try to keep the suggestions from getting out of hand in the early stages. Develop a system to record those which do come up for later use, make sure everyone knows of the system, then make very sure you do refer back to the "file" when you begin developing solutions and actions.

So far we have asked you for your impressions of the "facts." Now we want your opinions on the client systems you serve.

PROCESS: If your clients have been involved, they should answer the questions from their point of view, looking back at you and the services you provide to them. They should concentrate more on E1.2 than on E1.1, but should do some work on both.

E1.1 What additional clients should you have, and why?

E1.2 Check the appropriate level of activity for your group vis a vis each of your clients for both activities below:

Activity:	Aren't involved & shouldn't be	Aren't involved but should be	Are involved but not enough	Are involved & doing enough	Are involved & doing too much
Helping this client develop a capacity to sense and transmit his needs					
Actually helping this client become aware of needs he may not feel now					

STEP 2: SENSING CLIENT NEEDS

Here we want to turn around the analysis you've done so far. Before we were talking about needs of particular clients as you see them. Now we want you to think of how you as a group collect, synthesize, and make use of information from all your clients about their needs.

> PROCESS: If there are different "need-sensing" methods you use for different clients, you will want to continue the one-page-per-client approach used before.

2.1 How do you determine what your client's needs are:

2.11 -- quantitatively or through some formalized procedures?

2.12 -- other ways? (Specify)

2.2 How do your client's needs get transmitted to:

2.21 -- policy makers?

2.22 -- administrators of service programs?

2.23 -- administrators of R&D programs?

2.24 -- the research and development community itself?

2.3 How do the needs transmitted to each of these three groups get handled? That is, do needs result in policy changes, new services, or R&D? Specifically:

2.31 How do policy makers respond to client needs? How open are they to what clients are saying? How much freedom do they have to make policies to meet needs? And at a broader level, what are their policies regarding the need-sensing process itself?

2.32 How do program administrators respond to needs? How open are they? Is there a great deal of delay and red tape before needs can be met? Or, do they have the capacity to meet needs at all?

2.33 How do research administrators respond to needs? How open are they? Do they approach client needs as useful guides to creating relevant research, or see them as shopping lists or gripes not amenable to scientific investigation? Is there freedom to modify research lines or broad programs to fit new needs?

2.34 How easy or difficult is it to get researchers interested in working on topics related to client needs? What are the media available to get need statements to decentralized researchers?

2.4 What influence does your group bring to bear on each of the four groups above to make them more sensitive to client needs?

YOUR EVALUATION

E2.1 Check the appropriate level of activity, by your group or others as specified, for each of the client need-sensing activities below.

Activity:	Aren't involved & shouldn't be	Aren't involved but should be	Are involved but not enough	Are involved & doing enough	Are involved & doing too much
The activity of your group in gathering client needs					
The activity of your whole system in gathering client needs					
The activity of your group in transmitting client needs to:					
policy makers					
program administrators					
research administrators					
R&D community					
The amount and quality of work each group below does in responding to client needs.					
your own group					
policy makers					
program administrators					
research administrators					
R&D community					

STEP 3: THE SOLUTION-BUILDING PROCESS

Now we want you to consider the ways problem solutions, particularly those involving new knowledge, are produced in your system.

3.1 Looking at the R&D knowledge used in your system, what proportion of that knowledge is produced by persons who are employees of the system (not including persons under grant or contract)?

IF ALL R&D KNOWLEDGE USED IS PRODUCED OUTSIDE, GO TO QUESTION 3.2.

3.11 Considering those R&D producers in your system, first, how do they decide (or have decided for them) what R&D projects to undertake? List all the factors, forces, and people or groups who influence choice of projects.

3.12 What does the leadership of research inside your system view as most important: producing science which is maximally acceptable to the scientific community, knowledge which is maximally useful in solving real problems among clients, or some mix of the two?

3.13 List all of the pressures and forces you can think of which directly affect the researchers inside your system in:

3.131 assisting them to do client-relevant work

3.132 hindering them in doing this work.

PROCESS: Make a sheet with two columns, one headed "Helping forces", and the other "Hindering forces." List out all of the forces you can think of in each column, then compare the columns when you've finished.

3.14 All in all, does your system seem to reward or punish its scientists for producing client-relevant knowledge, or becoming involved in activities designed to communicate knowledge to users?

3.15 Do the scientists inside your system have access to specialists who can help them understand clients better and/or help them put knowledge into forms most useful to clients? If they have access, do they use the people available?

IF ALL R&D KNOWLEDGE USED IS PRODUCED INSIDE YOUR SYSTEM, GO TO QUESTION 3.3

3.2. Let's consider for a moment those R&D knowledge producers outside of your system whose work you sponsor and/or use.

3.21 How do you determine who the relevant R&D personnel are; i.e., those best suited to produce a given kind of knowledge? How do you become aware of new R&D talent, or personnel with whom you have never worked?

3.22 How do you maintain contacts or access to outside R&D personnel?

3.23 Do outside R&D personnel tell you what they want to do, or do you tell them what needs to be done (or if both, in what situations does each apply)? Do you use RFP's exclusively?

3.24 How do you insure that results produced by outside R&D personnel will meet the needs of clients? How do you influence or control applicability?

3.3 How much R&D have you sponsored to investigate the process of knowledge production, dissemination, and use itself? (IF NONE, GO TO QUESTION 3.4).

3.31 Were the needs for such work seen and supported by policy makers before the work was begun? What is the organizational climate or opinion about such work?

3.32 How have these studies been utilized; what changes have resulted in the way your system does its work?

3.33 What awareness and access do you have to the community of scientists and other agencies who are also doing research and action on the knowledge production-dissemination-use process? How are you using their work?

3.4 Considering all of the research knowledge produced and/or used in your system, is it available with a short enough "turn-around time" so that it is still meaningful to clients when the research is finished?

IF NO:

3.41 What, if anything, could be done to decrease turn-around time?

3.42 If turn-around cannot be substantially decreased, how might research planning efforts be increased or improved so that research done now may better anticipate what clients' needs will be when the results are in?
(Compare with what you said about client need-sensing.)

3.5 What is the current mix between basic and applied research in your system?

3.51 Who sets the mix, or how is it done?

3.52 Is there general satisfaction with the mix?

3.53 Do applied R&D projects build from findings of earlier basic research?

3.54 If your system has been moving to more applied research lately: how do you insure your basic scientists will not be dropped by the wayside, and their more fundamental work ignored by the new trend?

YOUR EVALUATION

E3.1 As you see it, what are the most important problems with the research knowledge now produced in or for your system?

	Importance of problem:				
	Not a Problem				Very Important Problem
Overall quantity of knowledge	1	2	3	4	5
Overall quality of knowledge	1	2	3	4	5
Basic/applied mix	1	2	3	4	5
Sources (who is doing the work)	1	2	3	4	5
Monitoring or evaluation of R&D	1	2	3	4	5
Funds available to produce research . . .	1	2	3	4	5
Extent to which results meet client need.	1	2	3	4	5
Extent to which knowledge, once produced actually gets sent to users	1	2	3	4	5

STEP 4: DISSEMINATION OF KNOWLEDGE

Once an item of research knowledge is produced, it must be translated for and transmitted to appropriate audiences. Here we will ask you to look at the translation and dissemination activities of your system.

4.1. Knowledge transformations: How much effort is put into:

4.11 -- adapting R&D findings from the traditional scientific media, e.g., journals and reports, to media the intended clients actually use?

4.12 -- changing the format and/or presentation of information to match the language of the client?

4.13 -- changing the type or content of information given to clients, e.g., by combining practical application information with the R&D findings?

4.14 What is your actual capacity for producing documents and output in all media?

> PROCESS: List all of the output media you use across the top of a large sheet of paper, then list the following down the side: funds available, printing regulations, mailing lists, technical experts, (etc.). Cross out the combinations which don't make sense, then fill in the ones which do with the information you have.

4.15 What is your capacity for storage and retrieval of information: e.g., indexing, search staff, computer systems, etc.?

4.16 What is your capacity for collecting or producing summaries, abstracts, bibliographies, and other guides to R&D information? Do these cover all knowledge in their field, or just the work you produce or sponsor?

4.2 Knowledge Transmission (Dissemination):

> PROCESS: Answer the questions below for each of your important client groups.

4.21 As far as you know, what media does this client actually use? For what types of information?

4.22 How do you find out the above?

4.23 What media are you now using to reach this client?

4.24 How do you monitor the effects or uses of information you send to this client?

4.25 How do you help this client to understand, adapt, test, install, and make permanent the solutions he gets from the R&D knowledge you send him?

4.26 Now, what are the most important pieces or types of information you think this client has gotten from you in the past few years? (Pick a more specific time frame meaningful to you if you can).

SUGGESTED ACTION STEPS: After you have answered the questions for Step 4, convene representatives from each of your client groups (the same as used in Step 1, for example), and have them answer the same questions from their perspective. Compare the differences and discuss why the various groups see things differently.

ACTION STEPS: Again, have client representatives answer the questions below. Then discuss differences, relating evaluation to what was said in Step 4.

YOUR EVALUATION

E 4.1 Evaluate your system's work in each of the following activities:

	Aren't involved & shouldn't be	Aren't involved but should be	Are involved but not enough	Are involved & doing enough	Are involved & doing too much
Translating:					
from one medium to others					
using language of client					
expanding & including					
application knowledge					
building our capacity to output information					
Transmitting:					
using best media for each client					
determining client media preferences					
monitoring effects					
helping users adapt & adopt					

STEP 5: INTERACTION

So far we have dealt with linkage between knowledge producers and consumers from a formalized and rather impersonal perspective. Many D&U activities involve direct contact between sources and users of knowledge however, so let's turn to these "micro-system" opportunities.

5.1 What opportunities and procedures exist to foster the following kinds of interchange between users and knowledge producers:

  5.11 informal get-togethers, phone consultation, correspondence?

  5.12 workshops, seminars, task-related meetings?

  5.13 formal interaction procedures - reviews, reaction memos, joint supervision of work, etc.?

5.2 Who sponsors or instigates these; who monitors needs for them?

5.3 What have been the most important outcomes of these interchanges?

5.4 Are there any combined projects or work settings (e.g., demonstration or pilot projects, R&D-application projects) in which both researchers and users are active?

  5.41 Is participation equal and is decision-making shared, or is one group controlled by another?

5.5 Are there any projects or programs of work in which there is a high priority on each group learning the perspective and skills of the other, above and beyond just getting the job done?

YOUR EVALUATION

E5.1 Give your opinion on the adequacy of opportunities for each of the following in your system:

	Too little		OK		Too much
a. Chances for researchers and users to get together informally	1	2	3	4	5
b. Chances for researchers and users to work together on joint projects	1	2	3	4	5
c. Chances for researchers and users to exchange perspectives and skills	1	2	3	4	5

E5.2 Who (person or group other than your own) would you most like to work with on a joint project?

5.21 What project?

5.22 What would you like to gain from this?

5.23 Why haven't you done this already?

STEP 6: RDD&U SYSTEM OVERVIEW

For any complex system to function smoothly, someone must have a grasp of "the big picture": Who is doing what, and how do all of the parts fit together? This overview is necessary for both planning and day-to-day operations.

6.1 Who does the job of monitoring the whole system and building models of it?

    6.11 Is there sufficient capacity and information to allow this job to be done? Is there time?

    6.12 Is the overview function formal and regular, or does the job get done only informally and infrequently?

6.2 Once gaps are recognized, what mechanisms does the monitor have for starting work to fill them?

    6.21 Is there the capacity to *make* changes seen as necessary?

6.3 Who does the job of making all system members aware of the fact that they *are* part of a system, and where they fit in it?

6.4 Who represents the whole system to others *outside*?

    6.41 Does this person/group have enough accurate information and enough power to do the job well?

6.5 Who monitors other systems, learns from their D&U effort, and brings that knowledge back for use in *our* system?

YOUR EVALUATION

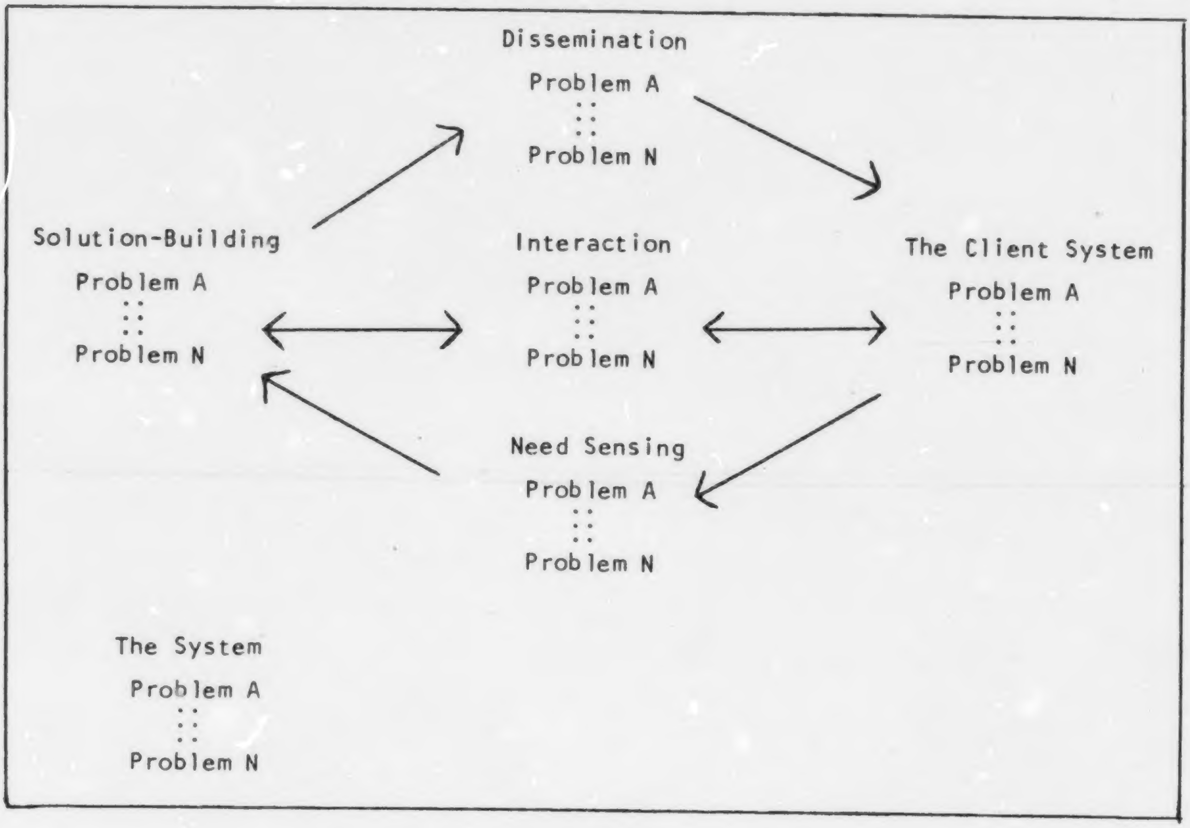
E6.1 To what extent does each of the following statements reflect the state of affairs in your system?

	To no extent 1	2	3	4	To a great extent 5
We are too busy caring for the trees to work on the forest.					
The "system" isn't one - it is just a collection of unrelated things.					
Coordination of activities is seen as a threat to individuals and programs.					
We fill recognized gaps only with new programs unrelated to other activities.					
Others see us as a coherent system with clearly stated goals and optimum programs to reach them.					

STEP 7: NOW WHAT?

The first step in building trial solutions from the work you have done must be to interrelate your answers to each of the six steps, looking for "keystone" problem areas -- those which control solutions to other identified problems.

We suggest you work as a combined group (e.g., providers and clients) to list the key problems in each step in a format like this:


Dissemination
Problem A
Problem N
Solution-Building
Problem A
Problem N
Interaction
Problem A
Problem N
The Client System
Problem A
Problem N
Need Sensing
Problem A
Problem N
The System
Problem A
Problem N

Next, by consensus if possible, choose one area to start on. Pick an important problem you feel you can be successful with -- this will be a shakedown of your problem-solving system as much as anything else, so don't take on a large, high-risk topic.

Next, go back to the file of solution/action suggestions you have been keeping, and use those which apply to the problem as a kick off to a session in which you design several alternative ways to solve the problem. From here on you must choose whether to put the solution into your normal channels, or to build some ad-hoc method to attack the problem. Whichever is chosen, assign some person(s) to serve as a monitor of the action with a charge to report back to all of you during the trial process.

You should also develop a way of producing an archival record of your work, making sure the record gets to all levels of your system.

From this point, it is difficult to make specific suggestions -- each system will be moving to somewhat individual approaches to solving problems. However, keep the following in mind:

--don't disband your group; keep it as a force behind your first solution trial, and re-convene it when this is finished to decide where to go next and how.

--the skills and information you've gained are valuable; you should strive for official recognition of your usefulness in future change efforts.

--monitoring and evaluation efforts should be developed for your own efforts, and the results fed back into your process.

--if the comment above sounds familiar: you are beginning to see that all the steps you have been through may be applied to analysis of your group as an innovation, a need-senser, solution builder, disseminator, client helper, etc.

--see your work as a constant course-correction process which must be repeated from time to time rather than a one-shot activity.

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